Seamless Integrated Security Solutions
by Africa Strategic Asset Protection

ASAP

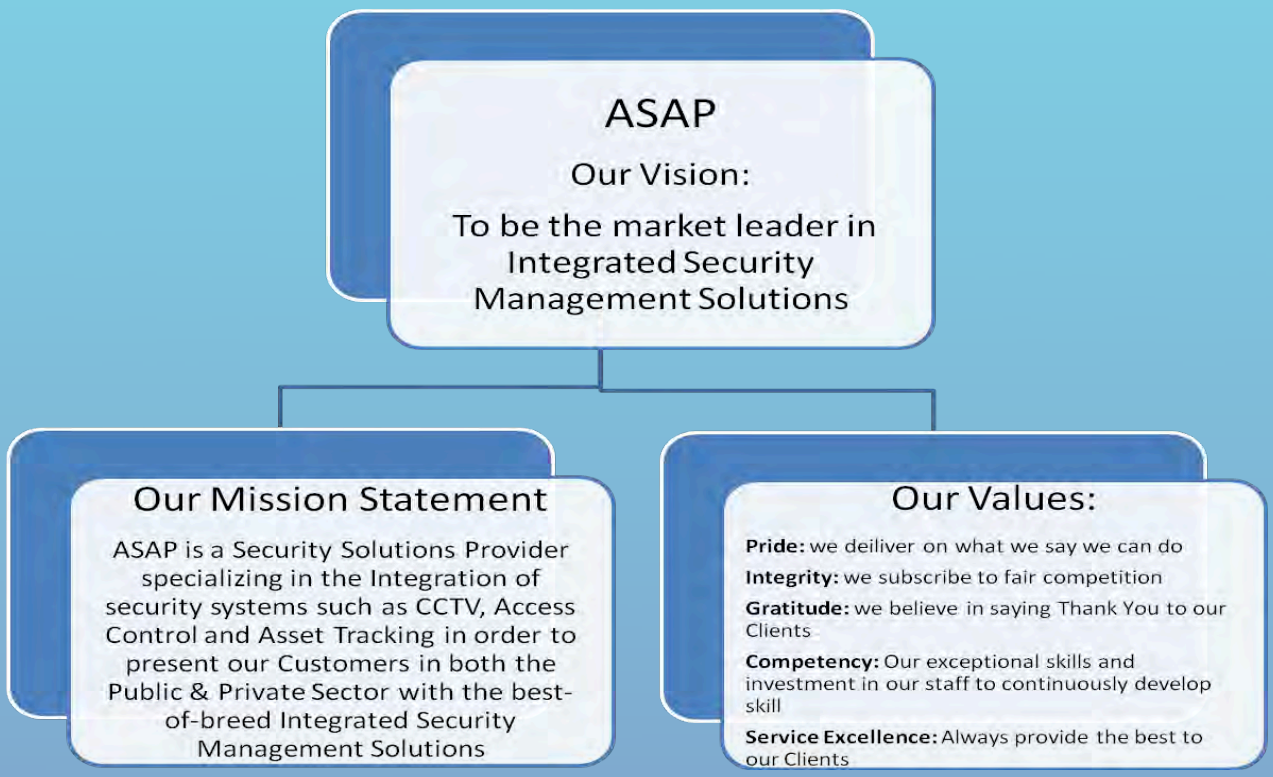
WE DON'T SELL PRODUCTS, WE PROVIDE SOLUTIONS!

COMPANY PROFILE

Our Mission Statement

Africa Strategic Asset Protection (ASAP) is an Information Communications Technology (ICT) based Security Specialist Company operating in the Security, Risk Management and Loss Control fields. We provide innovative and integrated **ICT Enterprise Security Management Solutions** in South Africa and abroad. This we do by:

- Doing continuous research in this specialized environment and providing the best possible solution for our clients;
- Providing a professional service combined with high professional standards and staff;
- Ensuring a safe, uplifting and secure environment for our clients by installing appropriate security solutions and making all their employees 'shareholders' thereof.
- Providing our employees the opportunity to be creative and innovative and in the process developing them and at the same time improving the solutions and services we provide.


ASAP
Our Vision:
To be the market leader in Integrated Security Management Solutions
Our Mission Statement
ASAP is a Security Solutions Provider specializing in the Integration of security systems such as CCTV, Access Control and Asset Tracking in order to present our Customers in both the Public & Private Sector with the best-of-breed Integrated Security Management Solutions
Our Values:
Pride: we deiliver on what we say we can do
Integrity: we subscribe to fair competition
Gratitude: we believe in saying Thank You to our Clients
Competency: Our exceptional skills and investment in our staff to continuously develop skill
Service Excellence: Always provide the best to our Clients

COMPANY PROFILE

Our Background

Africa Strategic Asset Protection (ASAP) cc was established in 1998 and at the time started off by providing Physical Security Solutions. In 2000 we started researching and exploring ICT solutions in the Security Sector and our search took us all over the globe to bring together ICT security solutions that met and exceeded the requirements and expectations of our customers. We brought out the best with regards to Access Control, CCTV Surveillance and Asset Tracking from different vendors. Through our endeavors and sound partnerships we brought these vendors together to integrate their solutions into an Enterprise Security Management Solution that caters for the needs of large corporate companies, government bodies and the SME sector.

ASAP is a proudly South African Black Owned ICT company, able to deliver a world class integrated solutions as required by our clients. In addition Africa Strategic Asset Protection (ASAP) has successfully completed a number of very large projects in various centres in South Africa. Where the installation's guarantee period has expired, they have successfully negotiated ongoing maintenance contracts.

ASAP installed base for Enterprise Security Management Solutions over the last four years represents a Rand value of R503 million and are as follows:

- Video & Surveillance –1500 cameras
- Access Control – 2100 access control points
- Asset Tracking – 14 000 personnel and asset tracking tags

COMPANY PROFILE

Our Solutions

Our key focus centers on the following:

- **Enterprise Security Management**

Our solution seamlessly integrates Access Control Management, Alarm Monitoring, Live Video CCTV Monitoring, Elevator Control, Parking Control, Building Systems Control and Intercom Interface. The core of our Enterprise Security Management Solution is Axiom V which seamlessly integrates with our preferred surveillance solution Detec, but also integrates with just about any other reputable CCTV Monitoring Solution.

- **Asset Tracking & Asset Control**

Our solution is based on Wavetrend's Active RFID technology. Long read ranges; the ability to perform in harsh, wet and metallic environments; and the ability to transmit data make active RFID ideal for applications in aviation, construction, defense, healthcare and transport.

- **Security Inspection Solutions (X Ray Scanning)**

Our core offering centers on THSCAN Systems and Technology. Solutions include amongst others Large Container/Vehicle Inspection, Baggage & Luggage Monitoring, Liquid Security Inspection System, Radioactivity Monitoring System, Explosives/drug inspection System and Mobile E-beam Security Systems.

COMPANY PROFILE

Our Clients

Some of **ASAP's** major clients are listed below:

- Department Of Public Works (National)
- Petro SA
- BP SA (National)
- Provincial Government Legislatures
- Coega Industrial Development Zone
- Works Department KZN Head Office
- Public Works: Eastern Cape

Some of these installations/sites are classified as National Key Points.

Our Industry Certification

The industry we operate in is regulated by the Construction Industry Development Board (CIDB) and the Private Security Industry Regulatory Authority (PSIRA). With the CIDB ASAP has achieved the following certifications:

- **Alarms, Security & Access Control Systems – 7SA**
- **Fire Prevention & Protection Systems – 4SF**
- **General Building Works – 6GB**

Our staff has also attained the required level of required PSIRA certification to operate and support clients that are classified as National Key Points.

Our Empowerment

ASAP is 67% owned by Black South Africans and has extensive experience within the security industry and is one of a few companies that have a 7SA rating from the Construction Industries Development Board (CIDB).

Our Locations

ASAP is in position to provide a service on a national basis as we do have a corporate office in Cape Town with regional offices in Johannesburg, Durban and Port Elizabeth.

Our Contact Detail

If you enquire any further information then please do not hesitate to contact us:

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- Website: www.afrisap.co.za

THE EVOLUTION OF SECURITY

1997 Security handled as additional part of the building infrastructure

- locally delivered through guards
- focus on intrusion prevention
- independent from business processes
- independent from IT systems and networks

Evolution of Security 2000 Security considered as technology related building investment

- delivered through guards, selectively replaced by technology
- still strong focused upon prevention of intrusion
- included in investment roadmap but not linked to existing business processes
- selectively related to IT organization

2002 Security evolves into a critical success (survival) factor for corporations

- Senior management focus, driven by conscious risk management
- Regulated through legislation/ regulations under strong stakeholder/ media focus
- Video surveillance rapidly replaces intrusion detection
- Increasingly delivered through technology integrated into IT systems

SECURITY TRENDS

Protecting Business Processes, People and Assets

Protecting business continuity
- Increased awareness -> assessment and management of risks
- Security customized to protecting business processes
- Intrusion detection replaced by multi- level, -site surveillance

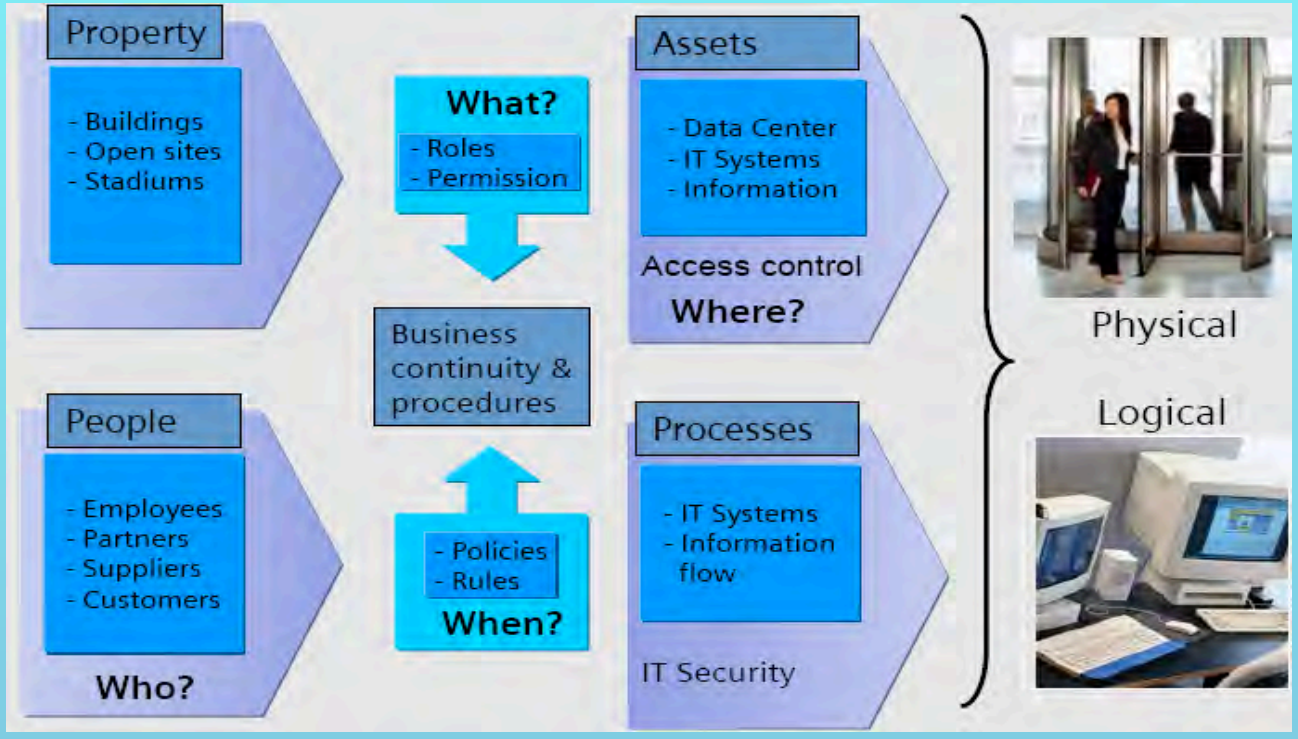
Innovation
- Security related technology is rapidly evolving and requires proactive life cycle management
- Savings from process improvements will be used for further investments (Return of Security Investment)
- Centralized controlling and proactive management of security operations

Common Misconception

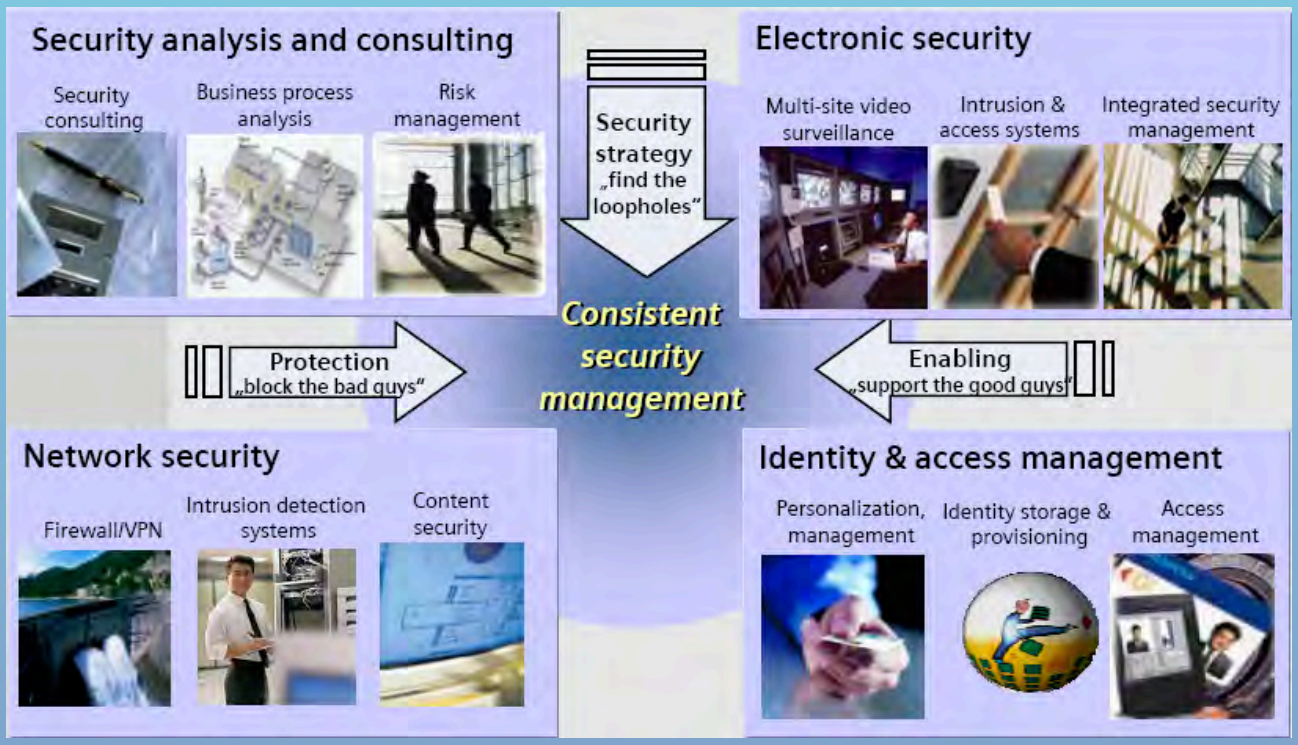
A common misconception is to consider technology as the driving force for a Integrated Electronic Security Strategy

SECURITY TRENDS

Capability to integrate physical and logical (IT) security is a key issue

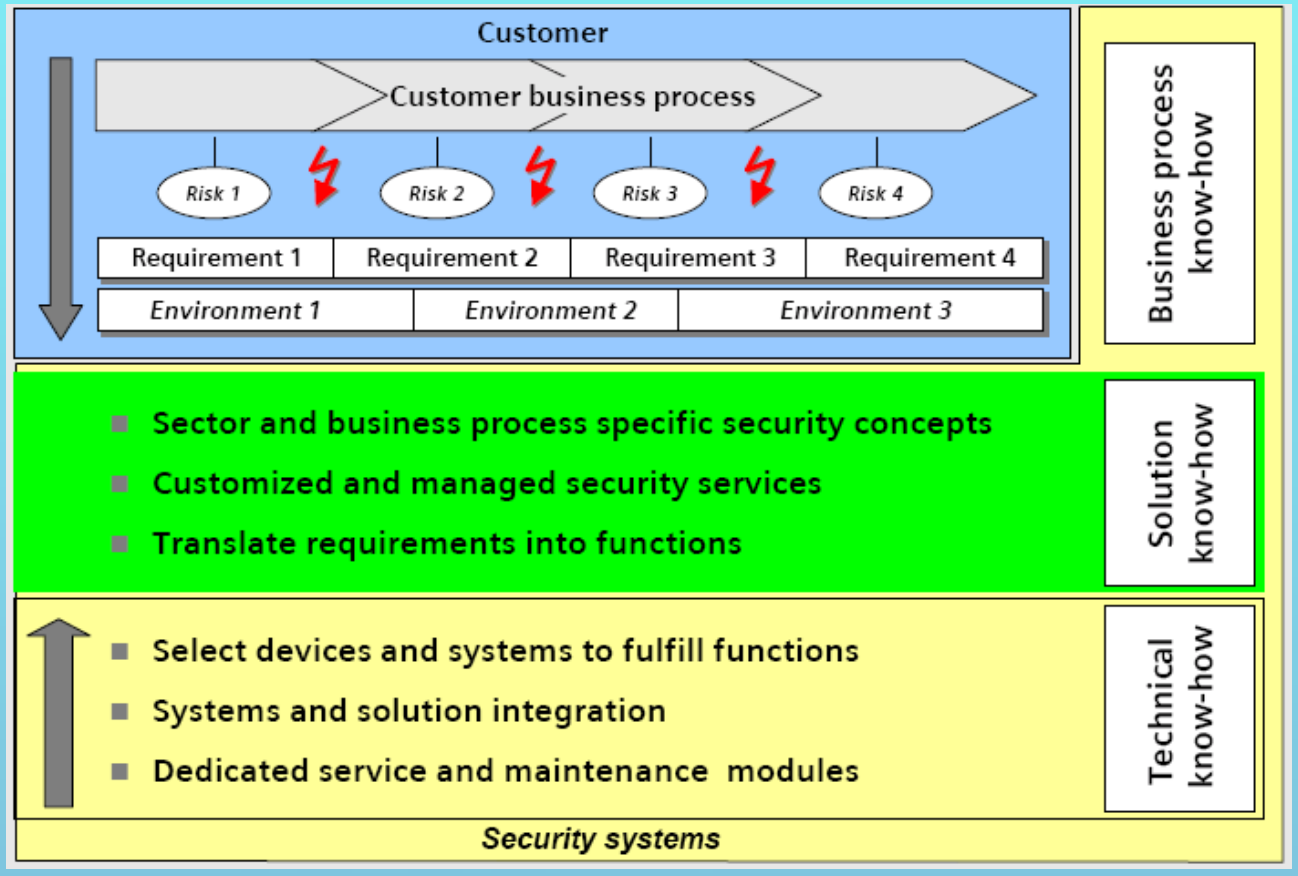


Complete portfolio for security requirements



SECURITY TRENDS

Combining technical, solution, business process know-how fulfils customer needs and fosters efficiency



SECURITY TRENDS

Integrated measures to prevent problems shifting

Integrated security solutions for mass events – example

SECURITY TRENDS

Integrated security solutions for mass events – example

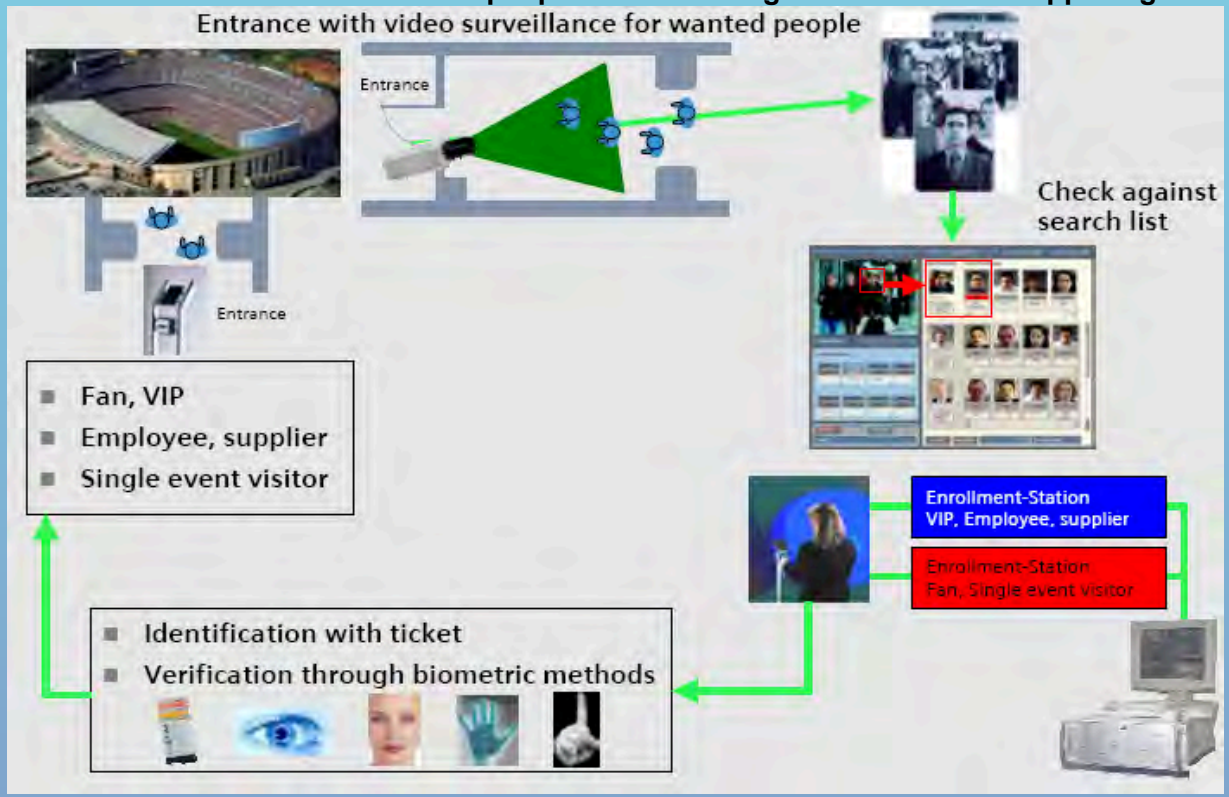
Now

- Physical check
- Manual ID
- Data exchange
- Camera surveillance
- Blacklist

Future

- Automatic ID and access
- Virtual check-in
- Green Lane, comfort
- Tracking and tracing people
- Pattern recognition
- Automatic alarming
- Customer loyalty (Customer Relationship Management)

Entrance control and observation of people flow including 'Blacklist search' applied globally



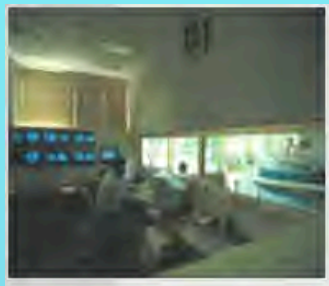
SECURITY TRENDS

Inside video systems enable centralized observation supported by face recognition systems

A state-of-the-art security solution ensures business continuity and Investment protection across the entire life cycle

SECURITY TRENDS

Security interacts with processes



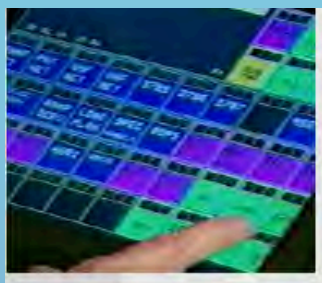
There is no absolute protection from eventual security gaps (intrusion, damage, sabotage), but their occurrences must be properly identified

Security departments of corporations expect to consistently and electronically monitor all key assets and discover gaps as they occur

Identified security gaps must be taken up by a priority-, information and appropriate action plan

It is of crucial importance that security departments of corporations get immediate knowledge of critical events in order to organize appropriate actions without delay, regardless of locations and people involved

Security interacts with people



A main source for security gaps are people within the premises (employees, contractors, visitors)

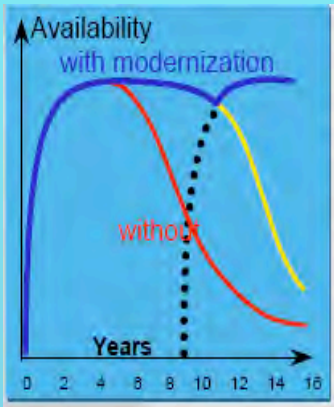
According to business processes and risks, corporations customize their security concepts from intrusion detection to automated, recorded multi-level surveillance

Security has become a key topic for governments and investors as well as for public and media

Security concepts and measures must comply with regulations, standards and common standards (laws, guidelines, certified approvals)

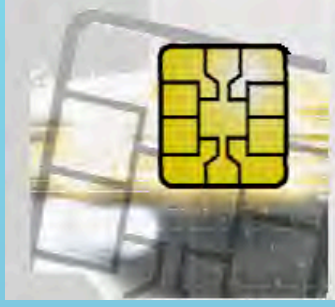
SECURITY TRENDS

Security interacts with assets



Harmonized processes and standardized systems and services are most import to protect the security investments and achieve sustainable cost effectiveness.

Corporations increasingly rely on leading security integrators to provide proven global expertise combined with local service availability



Electronic security is strongly driven by technology innovations related to IT and virtual networks (Internet, ERP-systems)

Corporations have difficulties mastering complex new technologies and increasingly buy or outsource specialized services (multi-level electronic security, IT)

DETEC - CCTV

Leading Digital Detection
and Surveillance Systems
DETEC
-your security

DETEC - CCTV

Product highlights

- A Detec network can consist of an unlimited number of Detec clients and Detec servers, supporting as many cameras as required.
- The Detec client functions both as a control interface and as a central management system. The Detec server acts as central database of recorded events.
- Remote monitoring via ADSL, ISDN, LAN/WAN, SMS, MMS and e-mail.
- Detec alarms and associated images can be sent to PCs, cell-phones or PDAs.
- Detec can be used with any combination of analogue coaxial or digital IP-based CCTV cameras.
- Pan, Tilt and Zoom (PTZ) controls available from the Detec client interface for suitably equipped PTZ cameras. Multiple PTZ protocols supported.
- Stores alarm sequences with user defined pre-alarm and post-alarm durations.
- Unique disc file system that provides a smart solution to handle failed drives.
- Event detection based on advanced mathematical algorithms, providing colour-image analysis with recognition of predefined objects and motion.
- Algorithm parameters can be usermodified to detect objects or events in specific environments.
- Possible to trigger alarms on unattended items, e.g. bags and suitcases.
- Object character recognition (OCR) on e.g. vehicle number plates or container labels.
- Image resolution from 192x144 pixels to the best resolution in the market with 768 x 576 pixels.
- Can easily be integrated to other security systems.
- Can replace video matrix systems.
- Password-protected access to different user profiles.
- Works with anti-virus programs on Windows XP

Detec is a sophisticated, flexible, automatic video surveillance system, capable of detecting, recording and transmitting activity in virtually any setting requiring security.

Detec is designed to be flexible

The Detec client-server architecture allows a security centre to support one or more separate Detec systems, with an unlimited number of cameras, using only one Detec client interface. If a central security centre does not exist, a Detec system can be managed from several different Detec clients in different locations, i.e. monitoring may be performed locally, on site, or remotely via telecommunication links.

This drawing shows how flexible Detec can be. Here you see two systems that are supported by several clients, both PCs and a PDA. At the same time you will see that one client is connected to both the systems.

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DETEC - CCTV

Detec reduces unwanted alarms

Detec is built around a powerful mathematical algorithm that uses colour and statistical image analysis in order to secure accurate video detection. This technology has been developed in close relation to Norwegian research centres. Detec's algorithm can uniquely be tuned for different applications and environments, making detection of the right objects in each case highly accurate.

The simplest level of Detec detection captures alarm sequences whenever any movement is detected in each camera image. The system then functions as an intelligent video recorder that only records sequences when detection (movement) is activated.

In it's most advanced mode, Detec can be used as a system that only records specific predefined situations. In this mode Detec's advanced algorithm will differentiate alarm prospects by object size, specific motion pattern, direction and speed. In doing so Detec can detect the difference between a car and a person, trigger the appropriate recording profile, and present the alarm sequence with instructions related to each type of object detected. In this way, security personnel can take the appropriate action for each type of alarm sequence generated.

Detec's algorithm can be tuned for different situations. It can accurately detect specific types of movement, as well as detecting when objects stop moving. This latter mode can be used to pick out left baggage at airports, stations, and other public places. Detec can also perform vehicle number plate recognition, to detect stolen cars, or to provide access control of vehicles to restricted areas.

Detec increases your security

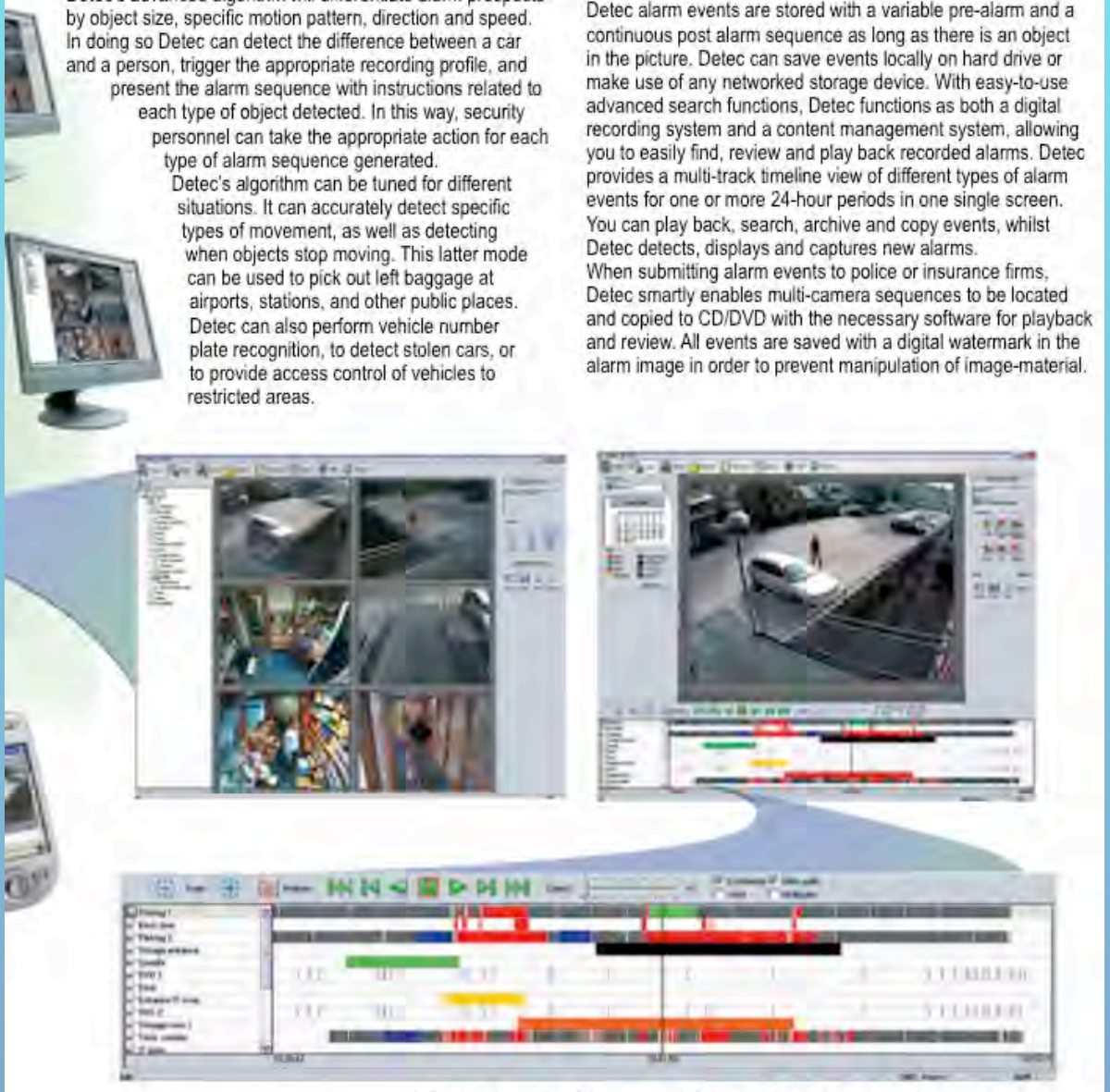
Detec's highly accurate detection, recording, and notification options, liberates resources. Security guards can be exempt from pure monitoring. This means that security personnel can be redeployed for remote reconnaissance, whilst still being able to receive Detec alarms via e-mail or Detec alarm sequences/ images on cell-phones or PDAs. This capability provides increased security guard mobility, and a greater area of security coverage.

To further enhance security, Detec can also be integrated with complimentary security systems e.g. process control, access control, and fire alarm systems.

Detec is user-friendly

Detec alarm events are stored with a variable pre-alarm and a continuous post alarm sequence as long as there is an object in the picture. Detec can save events locally on hard drive or make use of any networked storage device. With easy-to-use advanced search functions, Detec functions as both a digital recording system and a content management system, allowing you to easily find, review and play back recorded alarms. Detec provides a multi-track timeline view of different types of alarm events for one or more 24-hour periods in one single screen. You can play back, search, archive and copy events, whilst Detec detects, displays and captures new alarms.

When submitting alarm events to police or insurance firms, Detec smartly enables multi-camera sequences to be located and copied to CD/DVD with the necessary software for playback and review. All events are saved with a digital watermark in the alarm image in order to prevent manipulation of image-material.



In Search mode users have full overview over a 24-hour period, and with the playback functions at the bottom of the screen, you can easily navigate between the different alarms, picture by picture.

DETEC - CCTV

Areas of Use

Today, there are more than one thousand Detec installations worldwide, covering a wide selection of industries that include:

- Offshore oil rigs, heavy industry, military installations, office complexes
- Prisons, police stations, court-buildings, government buildings and other public buildings
- Parking lots and large-scale commerce centres
- Nationwide banks, postal offices, gas stations and shops
- Churches, museums, galleries, historical landmarks and other unattended objects
- Special applications such as oil and gas leakage detection
- Underwater surveillance in public swimming pools to avoid accidental drowning

Detec is used to monitor historical landmarks, museums and galleries.In Norway, Detec is the chosen system at several "stavechurches".

Detec is also used in a series of special applications. For example, Detec is used on board ships to detect oil leakages in engine rooms...

...or to prevent drowning in swimming-pools by setting up detection on objects lying under water for e.g. more than five seconds.

DETEC
-your security

Key Selling Points – Detec systems

What are the Detec systems' features and what benefits do they offer the customer?

Features	Benefits
Full network flexibility	Allowing a sufficient number of cameras, servers and client PCs to cover critical areas
Central management system with user-friendly software	Allowing you to easily monitor sites, as well as searching, playing back, archiving and copying recorded alarms
Advanced and accurate video detection module based on mathematical algorithms, providing statistical colour-image analysis.	You can easily avoid unwanted recordings of events of no interest, or on the other hand, make sure that you do not miss any events that occur. The accuracy of the detection module leads to recognition of predefined objects, their shape, and in what direction these objects move (tracking). Has proven capabilities in numerous different environments.
Colour based detection	The detection is much more accurate by the fact that it can separate between objects and backgrounds based on colour image analysis, and reduces potential analysis problems that may occur because of shifting surroundings (light, clouds etc). Most competitors use video detection based on grey-scale image analysis.
Events are stored with a variable pre- and continuous post alarm sequence (as long as the object that triggered the alarm is in the image)	You can easily investigate the whole event, both what happened before and after the alarm image itself
Possible to define alarms on unidentified, still-standing objects	Makes it possible to detect left-behind objects, such as suit-cases and cars in critical areas, and in that way reveal bomb-threats.
Optional I/O-module	Easy to integrate the system with other technical security systems
Integration with other security systems	Enhances functionality and standard of security operations

Module communication over a TCP/IP interface	Makes it operational in any network based on TCP/IP technology, such as ADSL, SHDSL and ISDN over remote distances, and LAN/ WAN and Ethernet in more constrained areas. Hence, the monitoring may happen locally or remotely. The technology makes it possible to use both IP-cameras and conventional analogue cameras.
Supports both analogue and digital cameras	The system may be used with both more conventional cameras as well as the IP-cameras of tomorrow. This means that customers can make a gradual investment in new equipment.
Supports megapixel cameras from multiple manufacturers	Megapixel cameras give much better restoration of details, making it easier to identify persons, license plates, events etc. Zoom tools work very well. Megapixel cameras work very well on moving objects.
Support for several PTZ camera protocols through several I/O interface options	You can easily integrate different brands of PTZ cameras and make full use of their functions through Detec's graphical user interface
Separate user interfaces for PDAs and 3G cell phones supporting JAVA technology	Alarm sequences can be received on PDAs and cell phones while "on the move", providing increased personnel redeployment and mobility, which in turn leads to greater security coverage.
Unique disc file system	You can avoid losing all data if storage discs should be defect, through a unique security solution exclusive to Detec. It provides another solution to failed drives than pure RAID. However, RAID solutions can also be implemented upon request.
Image resolution from 192x144 pixels to megapixel resolution	You can determine whether high image resolution is important or not, and in cases where the image resolution is crucial, the image quality and details will be very well represented. In cases where resolution is not that important, you can reduce it and save events for a longer period as you allocate more storage capacity.
Password protected access to different user profiles	Helps maintain system set up and keeps distribution of information safe

DETEC - CCTV

Works with anti-virus programs on Windows XP	Protects the system against viruses, which makes the system stable. Detec run on an operating system well known for most users, which reduces training costs.
Flexible system for information distribution	Alarm sequences and images can be presented and distributed to PCs, cell phones or PDAs, either as Detec archive files, SMS, MMS, E-mail or printouts. If you write Detec archive files to a CD from Detec's user interface, a program for playing back the files will automatically be attached.
Camera positions can be placed in maps	When placing camera icons in maps you can quickly identify where an event occurs.
Possible to create commands that can be displayed as buttons in the camera image	Makes it easy for guards to react to events by simply clicking a button to perform a command or set of commands. E.g. you can make command buttons to open doors in a scene where a camera points towards an entrance.
Time-controlled automatic archiving	Releases operators from manual archiving. Archiving can be done on hours when events are unlikely to occur.
Export of recordings to video file formats	Converted files (without watermark) can be played on any PC with a video file player, e.g. Windows Media Player
Colour coded alarm lists	Simplifies the work for guards monitoring the system, who will more easily be able to separate between type of alarms and can make a quicker assessment. The colour codes are logical in relation to what the system perceives an even to be.
Supports 16:9 format resolution in full screen view	Detec can be used with both 4:3 and 16:9 format LCD monitors
Window layouts can be sent and received by a user	Makes it easy for an administrator to set up clients within a network and determine what different users are able to see. It also simplifies setting up what to be viewed on monitors that does not have keyboard and mouse nearby, e.g. on displays in shops.
Users can be forced to sign in and be automatically signed out when inactive	Enhances user control and security
User Interface connection to server on port number or net address	User Interfaces can be connected to the server with both static and dynamic IP addresses

DETEC - CCTV

Where are Detec-systems being used?

A few case-study examples.

Customer	Market Vertical	Description of application/system
Finnish Navy	Military	Detec is used for general surveillance and perimeter security, including monitoring shoreline perimeter intrusion. Detec overcomes the challenges faced in maritime environments such as waves and water reflection, and only notify alarms on desired objects, such as boats, within specified regions.
Akershus Fortress/ Royal Guard – Norwegian Army	Military	Confidential
Norwegian Army	Military	Confidential
Bergesen LNG tankers	Maritime	Detec is used on board most of the Bergesen LNG tankers to detect oil and gas leakages in the vessels' engine room at an early stage.
Talisman Energy Ltd	Offshore oil-platform	Detec is used on offshore oil-platforms to monitor that flares do not extinguish. This is a specialized surveillance task that requires an alarm when motion is about to stop (so-called inverse detection), with high accuracy requirements.
Norwegian Parliament	Public administration	Confidential
Kristiansand Port	Transportation/ Port	Detec systems is chosen by Kristiansand Port in order to prevent shoreline perimeter intrusion, monitor pier/dock/warehouse activity, vessel loading and unloading, monitor container area and vehicles and person entering the port. The system comprises of 68 Detec A camera licenses, 7 servers and two manned guard centres. There is a mix of analogue-, IP-, megapixel- and PTZ-cameras. The Detec system replaced the system of an international competitor that did not prove good enough.
GE Health Care	Industry	GE Health Care, Lindesnes, is one of the largest pharmaceutical factories in Scandinavia. GE Health Care, Lindesnes use Detec systems for perimeter security and operations surveillance, and the system comprise of 5 servers, with a combination of analogue, IP- and megapixel cameras – 68 in total, all with advanced motion detection licenses. The installation has two manned guard centres.

DETEC - CCTV

Confidential	Prisons	Several Norwegian prisons have implemented Detec-systems to take care of video surveillance and perimeter security. Norwegian prisons have strict requirements to video detection accuracy, and keeping the false alarm rate to a minimum.
DnB NOR ASA	Banks	DnB NOR ASA is Norway's largest bank and the company recently decided to install Detec units in their branch offices nationwide to protect the offices from fraud and robberies. Detec AS' long experience in this market vertical has ensured a number of features highly appreciated in the industry.
Posten Norge AS	Postal offices	Posten Norge AS is Detec AS' largest customers and has installed hundreds of Detec units in their postal offices and transport terminals nationwide. Norwegian postal offices handle parcels, packages, mail and cash, and are under constant threat of swindle and robberies.
Sandvika Storsenter	Shopping Mall	Sandvika Storsenter is Scandinavia's largest shopping mall, and has decided to use Detec systems in combination with IP cameras. Detec was initially chosen because of its scalability and user friendliness. The system is operated by security guards during open hours, and has proved very useful as a tool in the fight against theft.
Museet for Samtidskunst (Contemporary Arts Museum)	Museum/Gallery	The surveillance system is used by the museum's guards to keep an eye on the art and visitors, and is a part of the security system in place to prevent theft and possible terrorist attacks.
Stavanger Kommune (City of Stavanger)	Public administration	The City of Stavanger has chosen Detec systems to be supplied to all their schools and other public buildings to secure them from vandalism and burglaries as well as protecting people. Detec was chosen because of the flexibility offered in terms of cameras supported, scalability and the possibility to use more advanced video detection settings on specified cameras if needed.
Haugesund Stadium	Sports Arena – Football	Pure megapixel camera solution used to monitor and record football supporters and potential hooligans and/or accidents during matches.
Marinlyst Stadium	Sports Arena – Football	A system delivered to specifically support the use of IP PTZ-cameras from Sony during football matches to monitor football supporters and potential hooligans and/or accidents.

DETEC - CCTV

New Functions	Detec Version (current version at Parliament is 10.3.x.x)		
	10.3	10.4	10.5
• When upgrading from 10.2 to 10.4 a warning will be displayed in the installation wizard, telling the user that the regions in the camera configurations will be erased, and that the user has to go through the region settings after the upgrade.	NO	NO	YES 10.5.0.1
• Improved pre- and post-alarm settings. o Ask for more details.	NO	NO	YES 10.5.0.0
• Possible to log out of Windows by clicking a button in the user interface. ○ Ask for more details.	NO	NO	YES 10.5.0.0
• Possible to send Monitor split views from one user interface to another. o Ask for more details.	NO	NO	YES 10.5.0.0
• The user interface now supports to be connected to database modules over Internet even though the database module PC does not have a static IP address. o Ask for more details.	NO	NO	YES 10.5.0.0
• A new way of searching in Search mode has been implemented, where you more easily search around a given point of time instead of a whole day. o Ask for more details.	NO	NO	YES 10.5.0.0
• A barrier for opening more than one of the same module on the same PC has been implemented. (A dialog box will pop up telling you that the module is already running). I.e.: o 1 Audio-module per audio-module-name. 1 HikVison-module. 1 Morphis-module per device-id. 1 IP-module per device-id. 1 Wavelet-module per device-id. 1 DBM-module. 1 IO-module per io-module-name. 1 PTZ-module per device-id. 1 SMS-module. 1 UI-module per ui-configset-name.	NO	NO	YES 10.5.0.0
• The user interface now save to the register each time an alteration happens in the split views. o Ask for more details.	NO	NO	YES 10.5.0.0
• The pre-alarms in Search-mode are indicated with a brighter shade of color that the rest of the alarms.	NO	NO	YES 10.5.0.0
• It is possible to filter and hide pre-alarms in Search-mode. o Ask for more details.	NO	NO	YES 10.5.0.0
• Window patterns (split views) adapted to full screen viewing in 16:9 format for wide screen monitors has been implemented. o Ask for more details.	NO	NO	YES 10.5.0.0
• More advanced logic for filtering alarms. ○ Only applies for Detec A and Detec Pro. ○ Ask for more details.	NO	NO	YES 10.5.0.0
• Functionality to prevent users from changing "Camera Name/ID" in the IP-module has been implemented: o Ask for more details.	NO	NO	YES 10.5.0.0
• When viewing live video from multiple IP cameras at the same time, the frame rate has now been increased. o Ask for more details.	NO	NO	YES 10.5.0.0
• Support for Panasonic WV-NW484 and Panasonic WV-NW960 implemented.	NO	NO	YES 10.5.0.0

• Support for Sony SNC-RZ50P and Sony SNC-RZ50N implemented.	NO	YES 10.4.1.3	YES
• In the detection modules: If a user change the value in the ”Camera ID” field and click the OK button a warning will pop up. This has been implemented so that the user shall not change ”Camera ID” when the user actually wants to change the camera description.	NO	YES 10.4.1.3	YES
• Support for new cameras implemented: ○ JVC VN-25U ○ JVC VN-26U ○ JVC VN-V686U ○ Vivotek PZ6112 (NTSC) ○ Vivotek PZ6112 (PAL) ○ Vivotek PZ6122 (NTSC) ○ Vivotek PZ6122 (PAL)	NO	YES 10.4.1.2	YES
• Possible to use DirectDraw for drawing in UIM. ○ Ask for more details.	NO	YES 10.4.1.0	YES
• The detection rate is now independent from live viewing frame rate and storage frame rate. ○ Ask for more details.	NO	YES 10.4.1.0	YES
• For images wider than 1280 pixels, the numbers of detection cells are half the normal in width and height in order to save CPU.	NO	YES 10.4.1.0	YES
• ATM integration.	NO	YES 10.4.0.5	YES
• Time line view and playback also available when playing back archives. Ask for more details.	NO	YES 10.4.0.5	YES
• Support for JVC TK-C575 implemented.	NO	YES 10.4.0.5	YES
• Support for Lumenera IP cameras implemented.	NO	YES 10.4.0.5	YES
• HikVision module now supports NTSC and SECAM in addition toPAL.	NO	YES 10.4.0.5	YES
• Support for Detec ActiveX SDK. ○ Meaning that others can use our Detec ActiveX SDK to integrate with Detec. ○ The following systems have so far used this SDK to integrate with Detec: □ G4Tec, Security Management System. □ RBH, AxiomV programme.	NO	YES 10.4.0.5	YES
• Global search possibilities in Guard mode. o Ask for more details.	NO	YES 10.4.0.5	YES
• When no video is available for a given time in playback in the time line view, an indication of this is displayed in the camera window.	NO	YES 10.4.0.4	YES
• Snapshot-buttion. I.e. saving still images automatically to a predefined folder when clicking the snapshot button.	NO	YES 10.4.0.4	YES
• Support for Arecont AV8360 and AV8180 implemented.	NO	YES 10.4.0.4	YES

DETEC WHITE PAPER

*This document describes the **Video Motion Detection** in the Detec software.*

18 February 2008

Version 1.0

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What is Detec?

Detec is a computer-based surveillance system that analyses video images from cameras positioned to monitor the security of an area or an object.

Detec processes the images and determines if they show activity that qualifies as an *alarm situation,* which may threaten security.

The equipment, connections and settings Detec uses are customized to meet the special needs of each *site* where it is an integral part of the security plan. Regardless of the details of this plan, the way Detec works, what you see and, ultimately, what you do to evaluate an alarm situation is the same.

Customized Security

Detec is designed to be flexible. It can be used in virtually any situation requiring surveillance. It is most often installed to enhance the security of a building, but it may also be used to ensure the security of a valuable object or even a person at risk.

Detec may be used, for example, to provide protection against burglary, unlawful entry, sabotage, or vandalism, at sites ranging from private homes and businesses to prisons, military bases, and police stations, to parking ramps, energy plants, historical landmarks, government buildings etc.

In addition to this wide range of applications, the setting in which you work and the duties you perform may be equally varied. For example, as a *security guard* monitoring the alarms reported by Detec, the *security centre* from which you operate may support only one computer monitor and Detec system, or several. The centre may be located at or very near the site where the cameras are, or many miles away.

It is also possible that you have unlimited access, as a *security manager*, to all of Detec's functions, including those which enable you to modify surveillance settings, or that your access is restricted to those functions related only to handling alarms.

All of these factors, and many more, are taken into consideration when Detec is first installed. Both the hardware and software are configured to specifically match the security plan for the site or sites under surveillance, for your security organization, and for you in your duties as a guard and/or security manager.

Camera positions and areas to be monitored, what Detec looks for in each area, detection schedules and levels of detection sensitivity are all well defined when you begin using Detec.

How Detec Works - a typical sequence of events

When Detec is installed to receive images from a camera, a security manager for the site (or an administrator) defines the scene to be monitored.
This includes:

- Specifying the critical areas.
- Defining activity to be analysed (movement in a critical area, direction of movement, etc.)
- Defining the size and shape of objects (people, animals, vehicles, etc.) which will trigger an alarm
- Describing and defining potential alarm situations

When Detec detects activity in a video sequence that matches the criteria defined as an alarm situation for a camera position, you will immediately and automatically see an *Alarm window* on the Detec screen at the security centre. You will also hear an alarm signal. This happens regardless of whether the security centre is physically “on site” and locally monitoring activity, or some distance away, receiving information at a remote location via telecommunication lines.

Detec is always active, but as long as it determines that there is no irregular activity in a scene under surveillance, the computer monitor and/or Detec window is blank unless you are watching live video from one of the sites, examining previous alarms or producing an alarm report.

Since time is usually a critical factor when Detec alerts you of an alarm situation, you can immediately examine the video image, video sequence and/or live video shown in the Alarm window.

There is typically one Alarm window for each camera defined in the Detec system. As additional alarms are triggered in a scene, new images replace the old and move the old alarm to a smaller window; or put the new alarm into a new window. Previous images are easily available to be examined.

The action you take in response to an alarm situation depends on your evaluation of the alarm. You may determine, for example, that the alarm is *real*, requiring a quick and appropriate response, or *false*, with a known or explainable cause. In some cases, you may need to defer an evaluation until you can confer with other security personnel. In general, the action you take depends on the guidelines defined for the site and the alarm situation.

Regardless of how an alarm is triggered or evaluated, all information about it is stored in the Detec database specific to each site. Among other details, the *alarm information* includes the alarm image, pre and post alarm video sequence, the date and time the alarm was triggered, camera position, a short description of the situation (person crawling, person walking, etc.), the evaluation (real, false, deferred) that was made, and the identity of the guard or security manager who made it. You can retrieve and review the information about an alarm at any time. It is stored in the database until it is deleted according to a predefined database maintenance schedule, deleted according to rules and regulations for video surveillance in the country or until the database is so full that new alarms automatically replace old alarms.

Detec's Video Motion Detection

Detec gives you the possibility to define advanced alarm criteria through a unique object classification and tracking algorithm. This makes it possible, for individual scenes, to define alarms like "truck driving from left to right", "crawling person approaching building", etc. However, to relieve you, as a security supervisor, of the burden of defining general and typical criteria, Detec comes with a default set-up for objects to look for, patterns of movement to follow, etc., that covers most standard security applications. Thus, the only part of the set-up that must be adjusted is a description of each camera view, in terms of its perspective.

To utilize Detec's advanced detection-functions it is recommended to read more in Detec's User Manual on how to set up detection according to your wishes and demands.

Object Classification

The object classification and tracking which forms the basis of Detec's situation analysis makes it possible to define advanced alarm criteria that must be fulfilled before Detec triggers an alarm. The reasons for utilising these possibilities may be diverse, but a few examples are:

- Differentiating between different types of situations to get a more detailed overview of the activity at a site, e.g. by setting up alarms for *person arriving* and *person leaving*.
- Differentiating between different types of traffic at a site by defining object specifications for cars, trucks and lorries.
- Limiting the number of alarms triggered by known, legal activity, whilst retaining the same degree of security for unwanted activity.
- Limiting the number of nuisance alarms triggered by well defined, re-occurring situations or changes in areas that must be encompassed by the detection.

This list is not meant to be exhaustive, but only to give you some ideas. To find out if and how the advanced settings can be utilized, you should read through this chapter with your own application in mind, and find which items are relevant.

Definitions

Here is a short glossary on important terms in Detec:

- Regions - Used to define a critical area Detec is to "watch over".
- Objects - Classification that for example separate people from cars etc.
- Motion - Defines how an object moves. This can for instance be between two regions.
- Alarms - Defines situations that Detec will react to and thus record. This may for instance be a motion pattern or similar.
- Alarm Sets - Defines a set of alarms that are to be active in a defined period.
- Schedule - Plan over which alarms (alarm-sets) that are active at what times.

DETEC - CCTV

Perspective

To Detec, an alarm situation is defined as a classified object following a specific pattern of motion. The objects are described in terms of natural size (i.e. height, width, area).

Thus, whenever Detec spots an object in the scene, it will measure the real size of the object, and match this against *object templates* such as “car”, “truck” or “person”.

To measure the real size of a spotted object, Detec uses the size of the object in the image together with the position of the object, and user defined description of the *perspective features* of the scene. (This is commonly referred to as *perspective compensation.*)

In Detec, the perspective is defined by drawing the outlines of *planes* or *surfaces* directly into the image from a camera, and position and scale two icons representing the size of a standing person in the foreground and background part of each plane.

Regions

In Detec, a *region* is an area of the scene of some particular interest or importance. In practice regions are used to define critical areas like doorways, gates, etc., or to split a scene to define directional motion from one region to another. For definitions of motion, please refer to this next section.

No matter why you want to create a region, the way you handle it is the same, and the way you draw the regions is pretty much like the way you draw the perspective.

As regions are scene and application specific, Detec does not provide you with any default settings.

Note that regions may or may not overlap the planes of a scene, although the most natural way to define a region is within a plane, i.e. in an area of the image where Detec is able to classify objects. You should further be aware that, unlike planes, it does make sense to create regions that overlap each other.

Objects

The object classification in Detec makes it possible to set up specific alarm situations for different types of objects.

The most commonly used objects; “walking person”, “crawling person” and “vehicle” are supplied as defaults with Detec. You can alter these standard objects, or create new ones, in order to tailor the object classification to your needs.

Motion

The object tracking in Detec makes it possible to set up specifications for patterns of motion that an object must follow in order to trigger an alarm. A motion specification in Detec can refer to no particular region (i.e. the whole image), one region (typically a critical region) or two regions (i.e. a directional motion).

Alarms

To Detec, an alarm is a recognized *object* following a recognized pattern of *motion*. Thus, to specify an alarm you simply create a pair of an object and a motion.

By default, Detec comes with three alarms and two system alarms (*Signal Failure* and *User Alarm*). The predefined alarms are for walking person, crawling person and vehicle following general patterns of motion, i.e. moving anywhere in the scene. To define other objects than the ones supplied as default, please refer to the section, Objects. To create templates for patterns of motion for specific detection, refer to the section Motion above.

Alarm Sets

With Detec, you can freely select which alarms to activate at different times of day different days of a week. This means that you are not simply switching the system on and off at different times, but you can actually make several sets of alarms and activate them on a per camera basis. This can, for instance, be utilized for running a general alarming around an office building during nighttimes, and a limited alarming on intrusion in critical areas during office hours.

Detec is delivered with three Alarm set defaults: ”Day”, ”Night” and ”Weekend”.

Setting up a Schedule

Detec gives you the possibility of setting up a scheme for what situations should generate an alarm at different times of day, and different days of the week, month or year. What alarms are active is determined by including or excluding different types of alarms in different *Alarm sets*. By default, Detec comes with two sets of alarms for every camera; one called “Day” and one called “Night”. You can however create new sets or delete the default ones as you wish.

Cameras with Simplified Detection Settings

These terms are especially important for Detec A and Detec Pro. For cameras with Detec T, Detec TL or Detec L licenses, the detection settings are simplified. Object, motion and alarms configurations are made inactive, and only configuration settings for region is left. When setting up a region, a new alarm is made automatically. This alarm will be named the same as the region.

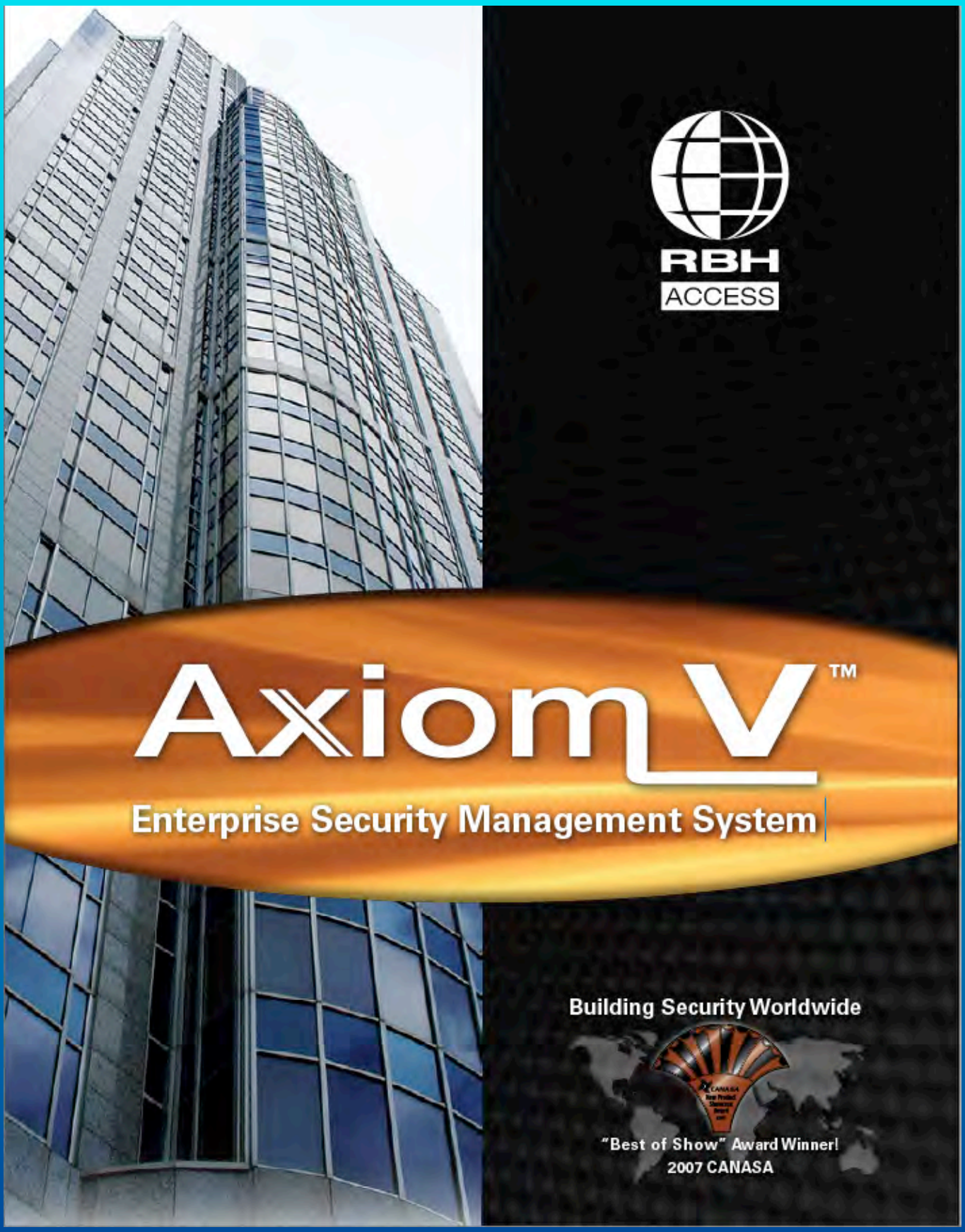
The differences between the five Detec systems are described in *separate Data Sheets*. Ask Detec AS or your local distributor for the latest available versions of the data sheets.

Highlights 2007

- Detec AS joined the ADABTS-project – R&D project on automatic detection of abnormal behaviour and threats in crowded spaces – international consortium
- Consortium members include:

Participant organisation name	Country
Swedish Defence Research Agency, FOI	Sweden
BAE Systems	United Kingdom
Detec AS	Norway
Home Office Scientific Development Branch	United Kingdom
Institute of Psychology – Ministry of the Interior	Bulgaria
SINTEF	Norway
TNO	The Netherlands
University of Amsterdam	The Netherlands

RBH - ACCESS CONTROL



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Our Corporate Vision

Drawing on decades of experience in the Electronic Access Control industry, RBH's founders insisted that **Innovation, Quality, Integrity, and Value** be the comerstones of the company and its products – and that the advantages resulting from dedication to these principles flow to its dealers and customers. Meticulous attention to details goes hand in hand with our broad strategic vision.

Since 1995 RBH Access Technology has been know for quality and innovative design.

Product design and manufacturing takes place at our Brampton, Ontario facility in Canada. Sales, distribution and support centers around the world provide services tailored to local customer's needs as we market our products through an international network of security dealers and systems integrators. Selective dealer recruitment and comprehensive training ensure highest customer satisfaction.

RBH Axiom systems have been installed in over 100 countries, on five continents and in multiple languages. Our company's growth is currently several times the industry average – bearing testimony the acuity of its vision.

We continue to invest in research and development to provide innovative and effective products that address the ever-growing market demands for open, stable, scalable and integrated security management systems. We will continue to compliment our exceptional products with first-rate support and competitive pricing to the ultimate satisfaction of our dealers and their customers.

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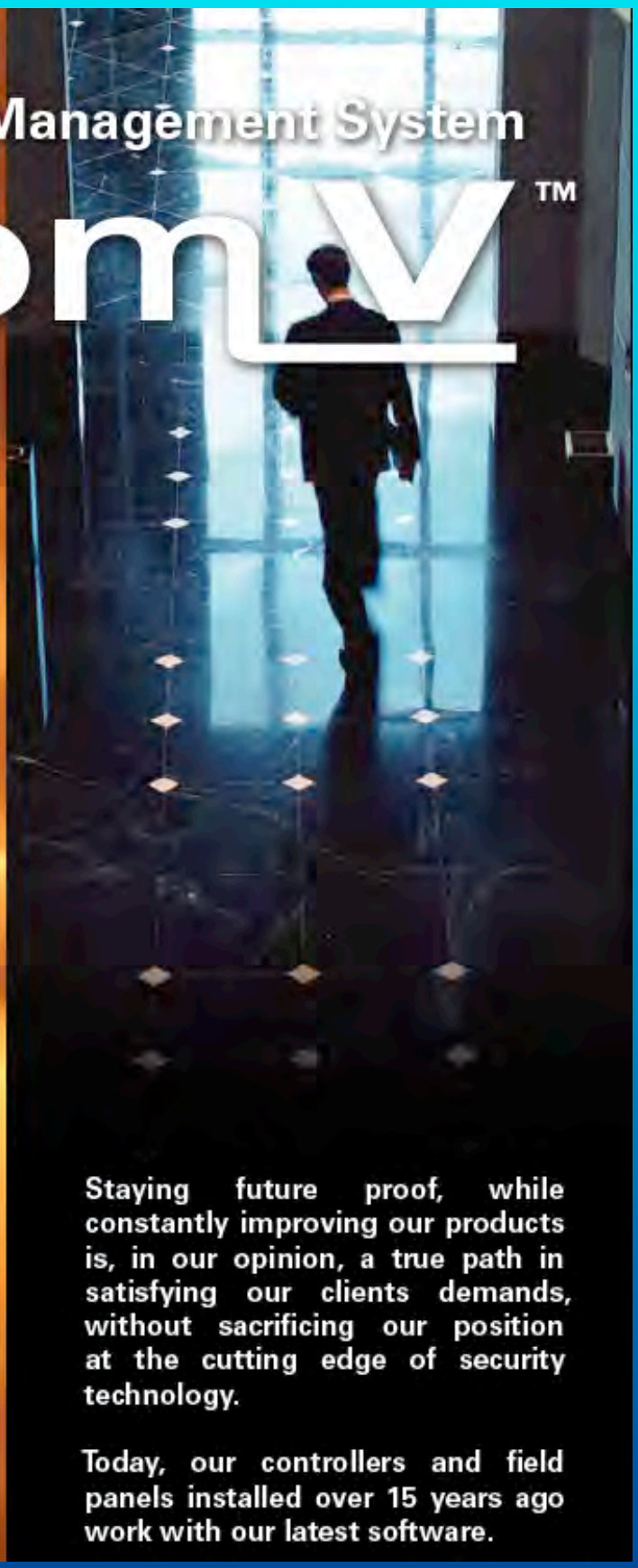
Enterprise Security Management System

AxiomV™



Complete security management solution

Bringing together different aspects of security management can be challenging. AxiomV stands up to the challenge by combining Access Control and Alarm Monitoring with Video, Building management automation, Asset tracking, Guard tour and Visitor management, and many more important security functions into an elegant and versatile security management solution.

Scalable and extensible system platform

Harnessing the power of the Microsoft SQL Server™ and powerful MS .NET™ framework, AxiomV is positioned on the cutting edge of the modern security technology. Adding new applications and solutions is easy due to the flexibility of the underlying software and hardware platform.

Sophisticated and Competitive

Solid architecture and highly customizable, flexible user interface provides powerful tools for Enterprise Security management. Robust and highly sophisticated hardware implements variety of flexible solutions at a firmware level. Designed and manufactured "in house", AxiomV offers unmatched longevity and will insure a long life span for a security investment. AxiomV provides a sophisticated yet affordable solution for systems of all sizes.

Staying future proof, while constantly improving our products is, in our opinion, a true path in satisfying our clients demands, without sacrificing our position at the cutting edge of security technology.

Today, our controllers and field panels installed over 15 years ago work with our latest software.

RBH - ACCESS CONTROL

System Architecture

Advanced, Flexible Infrastructure

AxiomV is designed to provide a scalable security management solution that takes advantage of the Microsoft native and well supported technologies for the Windows platform. ".NET" framework, fully integrated into Windows 2000, XP, Vista and Windows Server family of products allows for secure communications and feature scalability.

Modular Server Components

Individual server components responsible for Client/Server interaction, communications with field hardware, messaging and many others are as native Windows Services that launch automatically and remain operational even if an operator logs off from Windows. All functionality will remain available even in the event of unattended re-boot of a single or multiple host PCs.

Easily Scalable Platform

Choice of a free database engine (MSDE or SQL 2005 Express Edition) and a fully featured Microsoft SQL Server 2005 allows for a wide range of system sizes, capabilities and configurations. From a single PC, that contains a client and all of the server components, to a widely distributed system with multiple communications servers and various redundancy features AxiomV is infinitely flexible, expandable and easily maintained.

Microsoft SQL Server 2005

Microsoft SQL Server 2005 Express Edition

Microsoft MSDE

Advanced system architecture allows AxiomV to grow from a small office to an enterprise-wide security management system spanning multiple time zones and languages.

Optimized for system performance

To eliminate common bottlenecks, our engineers had worked with our largest clients to maximize the throughput of our data , messaging and communication server components. Processing a staggering number of events every second, AxiomV delivers a responsive yet comprehensively detailed experience to users and integration partners.

Active Directory Integration

Concurrently multi-lingual UI

On-line, context sensitive help

Intuitive and Powerful User Interface

Interactive Status Display

See live status of all controllers, devices, access points, apartments/suites, alarm points, outputs, etc. From unlocking a door to upgrading firmware on the fly, every control function can be accessed here. Right click access to live video or last ten recorded events for seamless CCTV integration. Quick reporting and easy access to complete configuration make our interactive status screen an invaluable tool in AxiomV's management. Certain operators can be denied access to this feature, it can also be quickly turned off to make more of the screen's real estate available. In conjunction with module selector it provides a powerful tool for control of an extremely large systems.

Event Viewer

More than just a running list of occurring events, Event Viewer offers all of the control, CCTV and configuration functionality through a convenient right click. Go right into editing of Cardholder's record by right-clicking on the card number, look at live video or video of an event, grant access on the door on which access was just denied, edit email notification and re-configure alarm point at firs sign or trouble.

No more looking, writing down and going into other sections of software – direct access to all features is where convenience and power of AxiomV truly shine.

RBH - ACCESS CONTROL

Reports

Powerful report generating capability is built into AxiomV. Database and history reports allow for thousands of variations, conditions, layouts and sorting. Provided functionality allows printing, export, email of reports, CCTV event playback as well as report export into many popular file formats.

Create and save custom reports, schedule automatic generation of routine reports.

Alarm Monitor - AxiomV allows scheduled designation of any event for persistent display and acknowledgement by operator. Display priority can be set, event's age and action instructions displayed. Specify a schedule during which a guard would be required to type in or select pre-programmed comment before clearing the event.

Interactive Mustering - displays the current location of cardholders, area occupancy counts and lists can be easily accessed. Quickly set or reset anti-pass for areas and cardholders. Configure the automatic printing of the **Evacuation Reports**

Access Point Activity

Greeting someone by name, verifying that an authorized person is using a card are just a few aspects of this feature. Video verification screen can be assigned to monitor specific doors and display cardholder's live and on-file picture, basic information and 5 additional fields as access is attempted. Granting Access, locking/unlocking of the displayed door(s) is accomplished through on-screen controls. Quick cardholder lookup simplifies staff training.

Dynamic Interactive Maps

Control all system devices and view live status from a dynamic map with just the click of a mouse. The easy "drag and drop" interface allows you to create your own maps or import bitmaps and AutoCAD drawings. Position and re-size icons for every controller, door, input and output, cameras and shortcuts to other maps. Complete with manual or automatic display on alarm, mapping is enhanced by direct and full access to all control and configuration functionality, integration with live and event video for each device. Display 3rd party alarm zones and other control functionality on our Interactive Map with our PC-100 modules.

Alarm Monitoring

An extremely large number of unique alarm points can be monitored by an AxiomV system. Each point can be fully configured for type of annunciation, priority, customizable action messages, ASCII output, CCTV trigger and executable link. Live graphic maps and color coded alarm handling instructions guide operators in efficient response to each alarm.

Central Station reporting

Via IP or fully supervised dialer AxiomV will forward alarm messages to the Central Station in industry standard SIA format.

Accessible from anywhere...

Access to all control and configuration functionality, integration with live and event video is available from Event Viewer, Live Status Display and our Dynamic Interactive Maps on all Client workstations.

RBH - ACCESS CONTROL

Photo ID Badging

Our Photo ID module provides an easy to use and powerful tool for creating high quality, dual sided personalized credentials. Multiple images can be stored for each cardholder. They can be printed on a card along with barcodes, signatures, fingerprints, static text and every data field of Cardholder's record.

Intuitive, built-in card template designer allows for import of images and backgrounds, positioning and custom configuration of cardholder's images, text and data fields. Multiple templates can be created to differentiate employees, departments, etc. Magnetic stripe, Proximity, and Smart Card encoding is available with appropriate hardware.
Utilizing standard MS Windows interfaces allows use of any WIA compatible video sources for image capture, Signature capture pads and Card printers from various manufacturers.

- Dual-sided Cards
- Multiple Templates
- USB, WIA-based cameras
- Windows Printer support

Biometric Integration

Multiple brands of biometric readers are transparently integrated with AxiomV. For example: Enroll fingerprints within Cardholder Management screen on any workstation and they will be automatically transmitted to appropriate fingerprint readers: no 3rd party programs, no double data entry.

A variety of biometric technologies are supported: fingerprint, iris, etc. Using a combination of TCP/IP and Wiegand connections allows to integrate virtually any upcoming or established biometric technology.

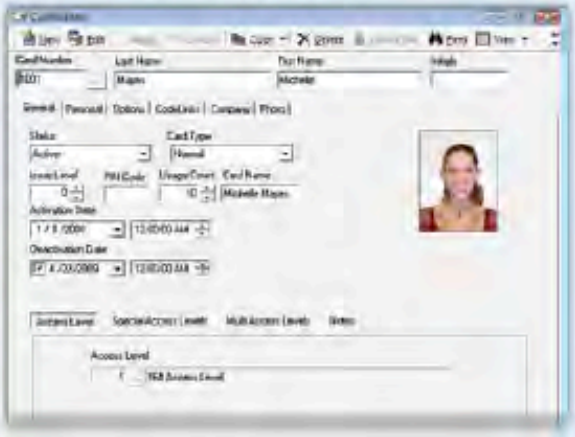
- Fully integrated
- Multiple Technologies
- USB enrollment readers
- TCP/IP and Wiegand

Cardholder Administration

AxiomV's Cardholder database can be setup for a single or multiple credential (car tag, card, fingerprint, etc.) to accommodate different reader technologies and management techniques. Each credential can have a 1 to 5-digit PIN associated with it which can be used independently, in parallel or with a card, depending on access point's configuration.

Variable behavior - Credentials can be designated as Normal, Visitor, Supervisor and Contractor to specify the type of behavior they will exhibit. For example: requiring an escort, overriding anti-passback and a number of other functions.

Status - Flagging of lost, stolen and suspended cards. Scheduled activation/de-activation - Date and time can be set to activate a card immediately or in the future (pre-mailing, contractor access, etc.). De-activation date and time will de-activate the card even if the PC is down, not communicating with field panels.



Extended Unlock - To comply with ADA requirements, designated handicapped cardholders will enjoy longer unlock times when they use access points controlled by AxiomV.

Access Permissions

A wide selection of methods for flexible assignment of access permissions is available:

A conventional **"Access Level"** designates access to particular doors during particular times and days, and once created can be assigned to large numbers of cardholders. A change in it will affect all cardholders assigned to it.

A flexible way to reduce the number of required "Access Levels" is our **"SpecialAccess"** option allowing you to create a custom list of schedules and doors in addition to or instead of the "base" access level.

"Multiple Access Levels" allow you to "build" a custom set of permissions from modular "access level" components working doors in addition to or instead of the "base" access level for each cardholder.

RBH - ACCESS CONTROL

Card Trace

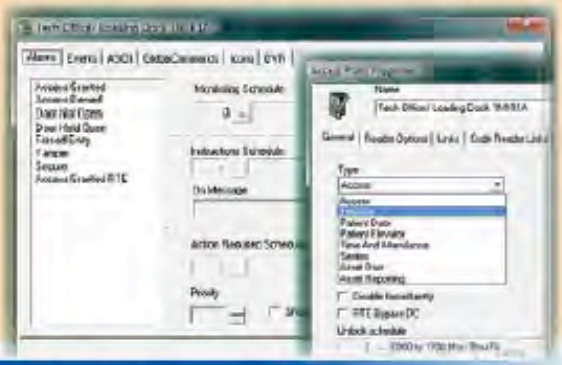
To help organizations deal with suspicious activity, certain cards can be marked for tracing triggering special notifications and automation sequences when used on doors with enabled tracing function.

Additional Features

Limited Use - Individual cards can be assigned a balance of up to 254 uses from which certain doors will deduct uses. As usage balance gets to zero, card will stop working. Certain cards can be exempt from these deductions.

Vacation - To prevent unauthorized use of cards while employee is on vacation without changing their access level, status and other settings, two temporary suspension periods can be configured for each cardholder.

Stealth – Helping Security Managers supervise and audit their staff, AxiomV allows making use of a credential invisible to system operators on a scheduled basis. Stealthy inspection will not be seen on operator's screen but will be recorded in the database for future reporting.



CodeLinks

AxiomV provides an ability to execute an automation sequence when a particular card or PIN is used on a particular reader. This feature serves our customers especially well in situations when a single reader controls a large number of field hardware (locks, alarm zones, etc.). Public storage, manufacturing facilities are just a few of many useful and unique applications of this feature.

Cardholder User Interface Features

Card Management – Card and cardholder data can be easily copied and duplicated streamlining management operations and reducing operator training required.

Search – Cardholders and their card can be easily found via built in quick card number search and powerful "Search" function, allowing use of every field of cardholder's record along with Boolean operators for truly complex searches.

Custom Fields – functionality of the Cardholder Management screen can be further extended by adding additional information tabs with custom database fields and layouts. Text, number, date custom fields will be added to all search functions and report configurations.

CCTV Module

Capabilities of AxiomV's sophisticated Access Control and Security Management Systems is extended through an open architecture interface with a wide range of Digital Video Recorders (DVRs) and RBH and 3rd party Network Video Recorders (NVRs).

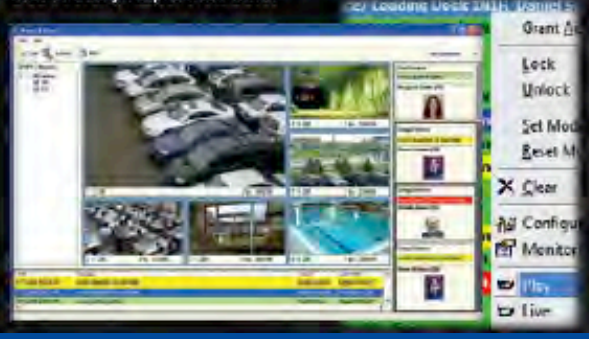
Supporting multiple DVRs from different manufacturers on the same system simultaneously provides enhanced flexibility and freedom of choice of manufacturer.

By simplifying video search and allowing Access Point control directly from the live video screen, AxiomV provides a wide range of user -friendly features.

- **History event viewing**
- **Live video on screen**
- **TCP/IP connections**
- **Report integration**
- **Pre, post event viewing**
- **Supports multiple makes**
- **Control PTZ on-screen**
- **Call/Shot assignment**

Over the Internet or office LAN, the system user has direct system-wide access to live video, event viewing, historical event based video search, and video export functionality. Custom tailored assignments link individual Access and Monitoring Points to specific cameras across multiple DVRs, providing an ability to set pre- and post-alarm viewing preferences and PTZ shots.

Our system provides direct access to DVR features from the System Status screen, Event Log display, Interactive Maps, and History Report module.



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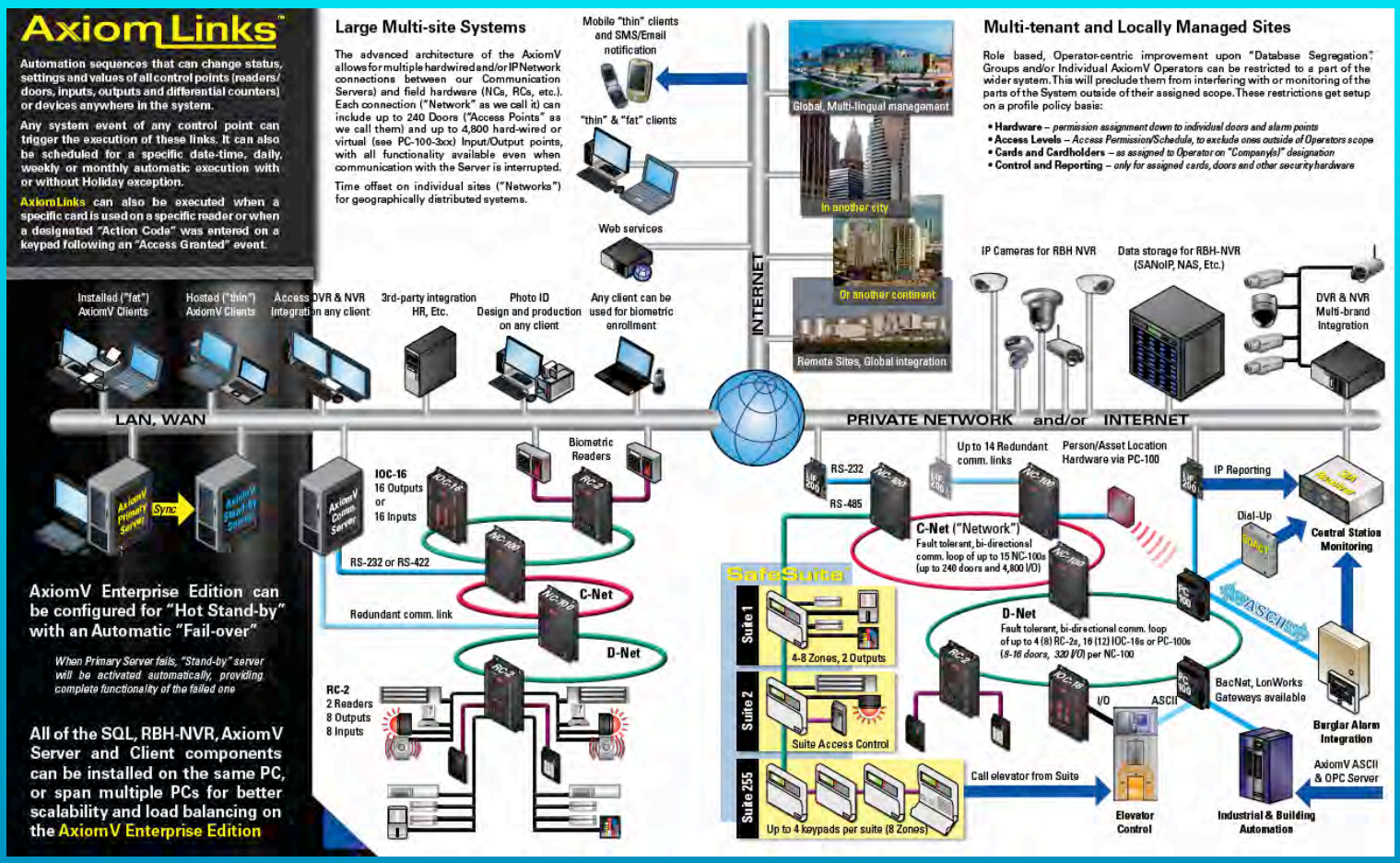

AxiomLinks
Automation sequences that can change status, settings and values of all control points (readers/doors, inputs, outputs and differential counters) or devices anywhere in the system.
Any system event of any control point can trigger the execution of these links. It can also be scheduled for a specific date-time, daily, weekly or monthly automatic execution with or without Holiday exception.
AxiomLinks can also be executed when a specific card is used on a specific reader or when a designated "Action Code" was entered on a keypad following an "Access Granted" event.
Large Multi-site Systems
The advanced architecture of the AxiomV allows for multiple hardwired and/or IP Network connections between our Communication Servers) and field hardware (NCs, RCs, etc.). Each connection ("Network" as we call it) can include up to 240 Doors ("Access Points" as we call them) and up to 4,800 hard-wired or virtual (see PC-100-3xx) Input/Output points, with all functionality available even when communication with the Server is interrupted.
Time offset on individual sites ("Networks") for geographically distributed systems.
Mobile "thin" clients and SMS/Email notification
"thin" & "fat" clients
Web services
Global, Multi-lingual management
In another city
Or another continent
Remote Sites, Global integration
INTERNET
Multi-tenant and Locally Managed Sites
Role based, Operator-centric improvement upon "Database Segregation". Groups and/or Individual AxiomV Operators can be restricted to a part of the wider system. This will preclude them from interfering with or monitoring of the parts of the System outside of their assigned scope. These restrictions get setup on a profile policy basis:
• Hardware – permission assignment down to individual doors and alarm points
• Access Levels – Access Permission/Schedule, to exclude ones outside of Operators scope
• Cards and Cardholders – as assigned to Operator on "Company(s)" designation
• Control and Reporting – only for assigned cards, doors and other security hardware
IP Cameras for RBH NVR
Data storage for RBH-NVR (SANoIP, NAS, Etc.)
DVR & NVR Multi-brand Integration
Installed ("fat") AxiomV Clients
Hosted ("thin") AxiomV Clients
Access DVR & NVR Integration on any client
3rd-party integration HR, Etc.
Photo ID Design and production on any client
Any client can be used for biometric enrollment
LAN, WAN
PRIVATE NETWORK and/or INTERNET
AxiomV Primary Server
Sync
AxiomV Stand-by Server
AxiomV Comm. Server
IOC-16
16 Outputs or 16 Inputs
Biometric Readers
RS-232 or RS-422
Redundant comm. link
C-Net
D-Net
RC-2
2 Readers
8 Outputs
8 Inputs
Up to 14 Redundant comm. links
Person/Asset Location Hardware via PC-100
RS-232
RS-485
C-Net ("Network")
Fault tolerant, bi-directional comm. loop of up to 15 NC-100s (up to 240 doors and 4,800 I/O)
IP Reporting
Dial-Up
Central Station Monitoring
SafeSuite
Suite 1
4-8 Zones, 2 Outputs
Suite 2
Suite Access Control
Suite 255
Up to 4 keypads per suite (8 Zones)
D-Net
Fault tolerant, bi-directional comm. loop of up to 4 (8) RC-2s, 16 (12) IOC-16s or PC-100s (8-16 doors, 320 I/O) per NC-100
ASCII
BacNet, LonWorks Gateways available
Burglar Alarm Integration
I/O
ASCII
Call elevator from Suite
Elevator Control
Industrial & Building Automation
AxiomV ASCII & OPC Server
AxiomV Enterprise Edition can be configured for "Hot Stand-by" with an Automatic "Fail-over"
When Primary Server fails, "Stand-by" server will be activated automatically, providing complete functionality of the failed one
All of the SQL, RBH-NVR, AxiomV Server and Client components can be installed on the same PC, or span multiple PCs for better scalability and load balancing on the AxiomV Enterprise Edition

RBH - ACCESS CONTROL

Access Control

Advanced Access Control Technology

Multiple Reader Technologies - Reader of any technology can be used via our standard Wiegand interface. Proximity (traditional, iClass or MIFARE), Mag-stripe, Bar-code, Biometric to name just a few.

Multiple Card Formats - Up to 5 different card formats can be used simultaneously on the same Access Point (Reader/Door). This feature allows easy site consolidation and smooth transition between new and legacy cards.

Reader/Keypad operation - Card reader and an 8-bit Wiegand keypad (integrated into the reader or installed side-by-side) parallel card or PIN use. Both reader and keypad can be individually enabled by schedule or system command to provide **"Card+PIN"**, **"Card Only"** or **"PIN Only"** operation. Unique user defined PINs 1 to 5 digits long are available to each cardholder.

Man-trap, Air-lock, Sally-port – any way you call it, our controller logic can handle them with up to 120 doors each, enabled by schedule or command without any additional wiring or hardware.

Two-stage Door Held Open operation – (programmable warning and alarm) with reader sounder annunciation and external event trigger.

Door unlocking/re-locking - automatic by schedule with "First Person" delay feature, card multi-swipe as well as by an automation or manual command.

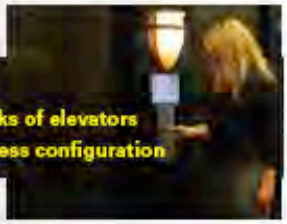
Elevator Control

Restricting access to particular floors on schedule, locking down elevators or making them accessible without restriction are part and parcel of our true elevator control. From a reader installed inside of the elevator cab a cardholder can enable all of the buttons to allowed floors, and after floor selection button press to disable activated buttons preventing piggy-back access to other floors. Multiple cardholders can make their selections during the trip.

AxiomV can communicate with elevator controller via programmable ASCII or input/output interface. Architecture employed makes it easy to add visitor access functionality to existing systems. Permissions are easily configured in "Access Level" screen.

Visitor Management - quick check-in, check out with many great features

- Issue cards and track their use
- Check-in items and issue receipt
- Create and print Photo IDs

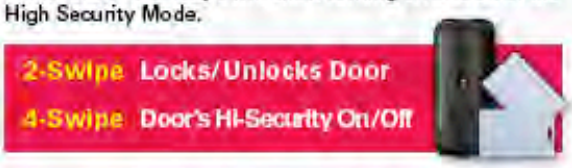


- **Up to 256 floors per cab**
- **Control individual or banks of elevators**
- **Floor-groups for easy access configuration**

RBH - ACCESS CONTROL

Advanced Access Control Features

Multi-swipe Functionality – Control your access points without access to AxiomV software. Particular cardholders can be authorized on door-per-door basis to be able to Lock or Unlock doors with a **double swipe** of a card (fingerprint or PIN use). **Four-swipe** will allow turning on and off of the High Security Mode.



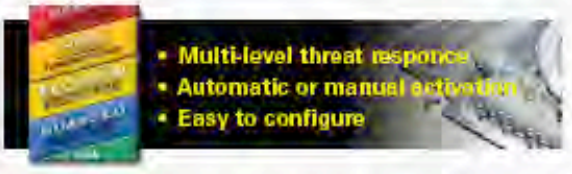
Two-man rule enabled on schedule for each door, or cardholder based "Visitor-Supervisor" or "Escort required" linking.

Anti-Passback functionality provides controlled sequence of card use with a fully featured multi-area layout, anti-tailgating, schedule enabled "Hard Enforcement" and area status reset. Anti-passback can operate locally, without a PC within a network of 120-240 doors, or Globally, system-wide with information routing through the PC. Door opening can be configured to trigger card's current area change. Live area status monitoring and timed anti-passback features are provided.

Man-trap, Air-lock, Sally-port – any way you call it, our controller logic can handle them with up to 120 doors each, enabled by schedule or command without any additional wiring or hardware.

Code Tracing –When you cannot restrict access, but need to take measures when a marked cardholders pass through designated doors, variety of functions can be triggered to record or prevent pilfering or to activate specialized automation sequences.

High Security Mode can interactively elevate access privilege requirement: an additional privilege designation on top of the assigned access levels. This mode can be enabled and disabled on schedule, by an automation link, card multi-swipe or manual command.



Auto Void – Dealing with a large, and especially high-turnover workforce can be challenging. AxiomV is capable of automatically disabling cards not used in a specified number of days. There is an ability to except certain cards from being affected by this feature: so your outside sales force would be able to use their cards regardless of how often they visit the office.

Much, much more - There are many more aspects of the Access Control operation that can be automatically or manually triggered or adjusted to ensure that doors operate exactly as customers require.

Additional Features

Automated Card Import - Configuration wizard makes it easy to configure an automatic on-going synchronization with third party personnel, resident and other management systems. Cardholders and cards can be added, updated and deleted automatically. SQL Server, MS Access databases, text files can be accessed on scheduled bases, contained changes implemented and downloaded to field controllers immediately. Source text files can be automatically deleted upon successful import.

Universal Copy Wizard - Programming and re-configuring hundreds or thousands of doors, tens of thousands of inputs and outputs, hundreds of thousands of cardholders does not have to be a tedious process. Our Universal Copy Wizard makes it possible to copy selected fields from a source record to especially selected destination records for every type data and many other configuration settings available in the system.

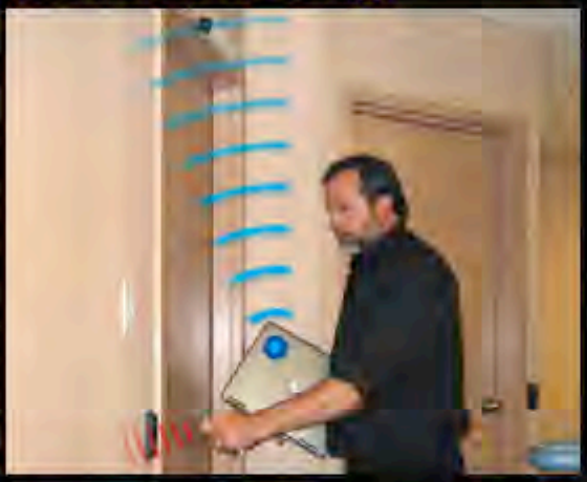
- Intuitive Access Levels with Elevator permissions
- Cardholder Reader Access for effective "task team" access permissions in addition to Access Levels
- Areas for mustering and anti-passback with triggered muster report printout and scheduled clearing.
- Intuitive hardware configuration tree
- Device groups for multiple item control
- Holidays - multiple days, two types
- Flexible sixteen period Schedules
- Adjustable toolbars and user interface

Automatic Backup - Keeping data safe will ensure painless recovery in case of hardware failure and other oops moments. Our integrated wizard will help you to specify where you would like to store your backup (local or removable drive, network volume, etc.), what data and when it is backed up. Multiple copies of backup can be kept, with oldest versions automatically deleted to preserve space. Backup can also be triggered manually to make a system snapshot before any major changes are implemented.

Message ports - Custom configured ASCII messages including static text and event data can be transmitted via serial, TCP/IP and email messaging ports. Every event of every hardware point and additional trigger events can initiate transmission through an appropriate port on a scheduled basis: during the day data may be sent to email, while after hours to a mobile phone. This feature makes it possible to integrate with virtually any piece of software and hardware capable of ASCII or email communication

RBH - ACCESS CONTROL

Asset Tracking



To prevent theft of your organization's assets or to keep track of their current location, our Integrated Asset Tracking system is designed to help stop persons leaving with valuables they are not authorized to remove from the premises or move them to another part of your facility. AxiomV will link individual assets with their owners and with pictures of both the protected valuables and their assigned owners.

Asset Tracking system operates by detecting the tag attached to an asset and requiring the use of a card or another security credential to authorize the removal of this item from the premises. If owner and asset do not match, system can notify authorities of an attempted action and if needed to lock down doors to prevent an unauthorized asset movement.

Long range Asset Detection Rreader and Cardholder Identification Reader share the same Wiegand cable, making retrofit installation and reader brand selection a breeze!

- **Real-time operation, works with PC down**
- **Live location status, owner and asset image display**
- **Easy to retrofit - multiple reader brands supported**

Asset Tracking function can be easily added to any access point controlled by the AxiomV Security Management System without the need for an additional panels and controllers. Full video integration is available for an additional visual verification as well as to easily assessable record of the events.

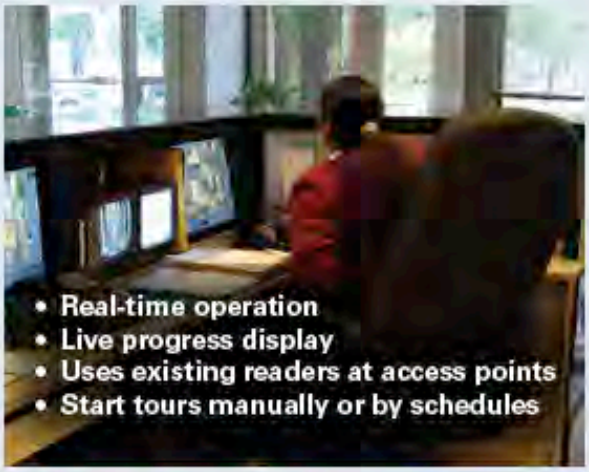
Asset/Person Location

Easily locate and track movement of mobile assets or persons within the facility without door control stations

- **Interactive location screen with signal indicator**
- **Roaming asset tracking capability**
- **Email notification and other integration features**

Interactive Guard Tour

In a small or a large facility there is no substitute for personal inspection of the access points and secured areas. To verify door's operation, presence of people in the area or various other issues that can be out of normal order a patrolling security officer is needed. To make sure that these inspections are performed on time and in proper order.

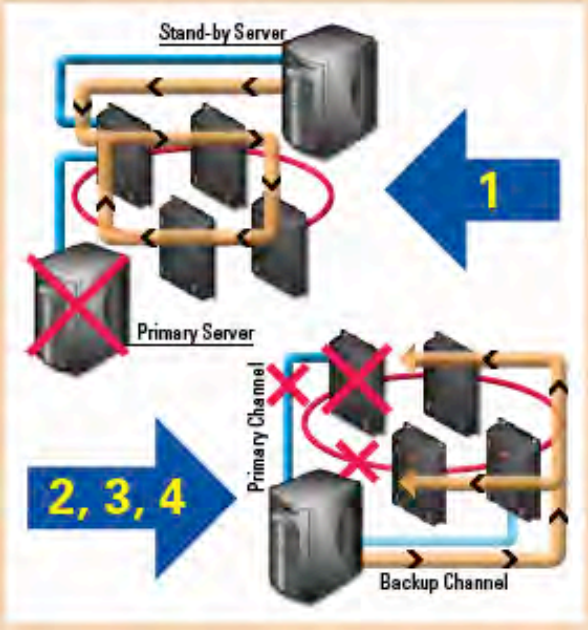


- **Real-time operation**
- **Live progress display**
- **Uses existing readers at access points**
- **Start tours manually or by schedules**

High Availability

High Availability Communications via 4 layers of redundancy, is available in the Enterprise Edition of the AxiomV™ Security Management System

- **Multi-Channel Connectivity, Threat Aware Hardware**
- **Distributive Processing, Redundant wiring**
- **Synchronized Hot Stand-By with automatic Fail Over**



RBH - ACCESS CONTROL

Access Points can be arranged in a sequence to be visited by a security guard. This GuardTour can be started manually or automatically on a schedule and will specify the times at which points on this tour must be visited.

As with all things in real life there are reasonable delays, and our programmable Grace Periods were designed to account for them. However if a guard was late beyond reason or had arrived too early, possibly taking a shortcut deviating from prescribed route, an alarm will be displayed and recorded.

For example "RoutineTour" will start at 10 PM at the Security Office, guard must make it to the Main Door 10 minutes into the tour, Rear Door in 25, Loading Dock in 40 and so on.

AxiomLinks™ Integration - Programmable automation sequences and commands can be automatically executed when the guard arrives a station early, late or on-time.

Guard Tour Status Screen - Displays if the tour has started, and if so when, as well as which guard has reached which access points and when.

CCTV Integration - Live video form a camera associated with an access point can be displayed when a guard reaches it while tour is in progress. This allows for visual verification and recording.

Guard Groups - For added flexibility, multiple guards can be assigned to a Guard Group to conduct tours together or separately. Any guard belonging to this group can advance the tour by presenting their ID.

AxiomV™ Enterprise Edition is built on multi-server architecture, where discreet servers are implemented across the corporate network with "Hot stand-by" and automatic "Fail-over" features. In case of one of the communication and/or data servers going off line, there is a fully synchronized, up-to date stand-by server ready to take over.

Each Communications Server handles multiple networks of NC-100s via a wide variety of communication technologies. Each one of those NC networks can have multiple connections to a Comm. Server. Our unique architecture allows these backup channels to connect to both "Master" and "Slave" NCs constituting a network. This way, not only the loss of a communication channel is sustainable, but also a failure of one or more of the Network Controllers. "Slave" controller will assume the role of a "Master" as the backup communications channel activates.

D-NET connects devices such as RC-2 Reader Controllers IOC-16 Input/Output controllers to the NC-100. 38.4 Kbps, RS-485 circuit runs on a "Class A" bi-directional communication loop of twisted, shielded copper pair. NC-100, 4-8 of the RC-2s and 16 IOC-16 controllers act as boosters and repeaters, combining the 3,000' distances between individual devices into a 15,000' loop. Due to it's bi-directional nature, D-NET can sustain cable sabotage and a failure of a device.

C-NET connects up to 15 NC-100s to each other creating a network of NCs. 2.5 Mbps, ARCNET packet based, supervised and self-adjustable C-NET runs on a "Class A" bi-directional communication loop of twisted, shielded copper pair. Each NC-100 acts as a booster and a repeater, combining 2,000' distances between individual NCs into a 12,000' loop. Due to it's bi-directional nature, C-NET can sustain a C-NET cable sabotage and a failure of a NC-100.

SafeSuite™

AxiomV's Complete Security System for Condominium and Hotel Suites

Elegant keypads serve as a burglar alarm and access control system, message center and building automation gateway. Operated locally, monitored and controlled from a management office SafeSuite takes advantage of AxiomV's existing infrastructure to deliver a cost effective and user friendly solution for integrated residential security.

Complete audit logs and live status display provide dynamic and secure platform for hotel operation and property management companies, while enriching guest's and resident's experience.

REMOTE CONTROL & CODE UPDATES

CENTRAL STATION & LOCAL ALARM MONITORING

TEXT MESSAGING

BUILDING & ELEVATOR AUTOMATION & CONTROL

Options:

- *Individual suite offsite monitoring, Revenue generation*
- *Suite notification of family members entering the building via parking or entrance door*
- *Wireless (pet motion detectors etc.)*

Readers Supported	1 (any technology, Wiegand interface)
Programmable Inputs	4 (8 per Suite); 8 - Special order LED keypad
Programmable Outputs	2 (voltage outputs, 8 optional)
Communications	RS-485; 38,4 Kb/s, Supervised; 255 Suites/NC-100
Power	50 mA (200 mA max) @ 12 VDC
Dimensions	6.625"W x 4.5"H x 1.25"D (15.9 x 11.4 x 3.2 cm)

RBH - ACCESS CONTROL

AxiomV™ Hardware

Our controllers and devices share a common design approach in being Flexible, Flash upgradable, providing Visual diagnostic LEDs, and Removable connectors, packaged into a rugged case.

Our dedication to quality and innovation clearly shows in our innovative and reliable hardware products.

NC-100 Network Controller

The NC-100 Network Controller is at the core of the family of our access control products. The extremely fast, optimized 32-bit system architecture allows for fast decision-making and communications. Distributed architecture allows for complete functionality by C-Net linked NC-100s even when the connection to the host is lost.

NC-100 Controls D-Link attached Reader, Input/Output controllers and other compatible devices. All information needed for this is stored in the NC-100's memory and augmented by built-in calendar and clock.

The NC-100 is built to provide maximum flexibility without compromising safety, security, usability, or affordability. Modular design allows maximum versatility for tailoring secure and dependable access control and security management solutions for any facility regardless of size.

NC-100 Processor/Memory	32-bit Processor / 256K, 1MB, 3MB up to 16 MB	
NC-100 Memory Capacity	Cardholders 7,700 - 500,000 / Event Log 4,400 - 500,000 (Depending on installed memory)	
Real Time Clock	Built-in (Controller also includes Watchdog circuit and memory backup battery)	
Host Communications	RS-232, RS-422 4-wire, TCP/IP via LIF-200 (1.2-38,4 Kb/s fully supervised) with status LEDs	
Controllers per C-Net	15 NC-100s via C-Net	
Controller Communications	C-NET (Bi-Directional; Class A; RS-485; ARCNET 156 Kb/s - 2.63 Mb/s auto-adjustable)	
Circuit Type	Ring (short or open circuit protection), 2 x D-Net ports / Panel (fully supervised) with status LEDs	
Cable Requirement	Shielded, twisted pair, 20 - 22 AWG; 2,500 ft (750 m) between devices, 10,000 ft (3,050 m) total	
Devices supported by NC-100	4 (8*)of RC-2s and 16 (12*) of IOC-16s or PC-100s; 255 of SafeSuite Keypads via D-Net	
Device Communications	D-NET (Bi-Directional; Class A; RS-485; 38,4 Kb/s)	
Circuit Type	Ring (short or open circuit protection), 2 x D-Net ports / Panel (fully supervised) with status LEDs	
Cable Requirement	Shielded, twisted pair, 20 - 22 AWG; 3,000 ft (900 m) between devices, 15,000 ft (4,550 m) total	
Power : Current Draw	220 mA max (controller with 256K memory)	100 mA max
AC Power Requirements	9-14 VDC (Preferably from nearest RC-2 or IOC-16)	
Dimensions	9.75" H x 6.875" W x 3.25" D (25 x18 x 10 cm)	4.75" H x 6.25" W x 2.0" D (12 x 16 x 5 cm)
Operating environment	Temperature: 0 to 70°C (35 - 150°F); Humidity: 20 to 80% RH (non-condensing)	
PC-100 Communications	To 3rd party devices - RS-232 and RS-485 (300 b/s - 2 Mb/s, set at factory), TCP/IP via LIF-200	
Supported formats	RBH Standard, Custom formats updated by flash memory update	

In combination with AxiomV's universal, field configurable software ASCII interface and OPC Server, our award winning PC-100 Hardware ASCII Gateway makes our product offering even more relevant in the building management, security and industrial control markets.

Interfacing with a wide variety of 3rd party building management, security and industrial control equipment can be challenging and costly. Our PC-100 hardware ASCII gateway is designed make this integration much easier and less expensive than conventional input/output means.

Via ASCII message exchange, PC-100 allows AxiomV to monitor status of inputs and various events on 3rd party systems for logging, graphical display and automation sequence triggering. It also makes it possible to control 3rd party systems by issuing ASCII coded commands.

PC-100 Universal ASCII Gateway

RBH - ACCESS CONTROL

RC-2 2-Door Reader Controller

RC-2 is designed to provide reader, input and output connections for two Access Points (Doors), controlled by an NC-100 via secure and redundant D-Net link.

The RC-2 is one of the most rugged and reliable reader controllers on the market, with a multitude of built-in features found only in high-end custom designed systems.

Variety of reader technologies supported via Wiegand interface (MIFARE, iClass, RFID, Barcode, Mag Stripe, Fingerprint, Iris, Etc.)

Concurrent support of up to 5 card formats per reader with 5-12 digit card numbers, multiple supervised power supplies, programmable I/O and full set of other features make RC-2 stand out in today's crowded marketplace.

IOC-16 Input Output Controller

IOC-16 is designed to provide a large number of inputs and outputs for monitoring and control by NC-100s, up to 16 IOCs can be connected to each NC.

Flexible design allows installer to select between fully programmable supervised input or programmable Form C dry relay output for each of 16 available points.

Perfect for Elevator control, monitoring large number of inputs and controlling outputs especially with our "Virtual Door" logic, while providing lightning-fast response.

Readers Supported	*2 with up to 5 concurrent card formats each*	**None**
Audio/Visual Controls	Red and Green reader LED, audible controls	
Reader Supervision	On-board reader tamper monitoring	
Cable Requirement	Shielded, stranded 6 or 8 conductor, 20 - 22 AWG; Max 500 ft (150 m) @ 20 AWG)	
Programmable Inputs	**8 - with status LEDs**	**Up to 16 (field selectable) with status LED**
Circuit Types	N.O. or N.C with no supervision, single EOL or dual EOL supervision (1K EOL)	
Dedicated Inputs	1 - Fire Alarm input with Status LED; 1 - Cabinet Temper Input	
Cable Requirement	2 conductor, 20-22 AWG; Max 1000 ft (300 m)	
Programmable Outputs	**8 (4 relays + 4 voltage outputs) with status LEDs**	**Up to 16 relays (field selectable) with status LEDs**
Relays	Form C relays, SPDT, 2 A @ 30 VDC, dry contacts; Fail Safe/Secure programmable	
Voltage outputs	Open collector electronic drivers, (12 VDC @ 100 mA MAX)	
Communications	**D-NET (Bi-Directional; Class A; RS-485; 38,4 Kb/s)**	
Circuit Type	Ring (short or open circuit protection), 2 x D-Net ports / Panel (fully supervised) with status LEDs	
Cable Requirement	Shielded, twisted pair, 20 - 22 AWG; 3,000 ft (900 m) between devices, 15,000 ft (4,550 m) total	
Power: Current Draw	**400 mA max (controller)**	**500 mA max (controller with all relays energized)**
Reader Power Output	1 A @ 5 or 12 VDC Fused; Supervised with LED	None
Auxiliary Power Output	1 A @ 12 VDC; Fused; Digitally Supervised with LED status indicator	
AC Power Requirements	16.5 VAC 40VA transformer; 3A Fused with Low/High Status LEDs; Run LED	
Battery Charging Circuit	13.8 VDC; 3A Fused with Status LED; Digital dynamic load test; Deep discharge protection	
Back-up Battery	12 VDC, 7 AH lead acid or gel cell rechargeable battery	
Lock Power Circuit	RC-2 Only: Input 16-18 VAC 40-80VA transformer; Output 12-24 VDC, 3A Fused with Status LED	
Dimensions	9.75" H x 6.875" W x 3.25" D (25 x18 x 10 cm)	
Operating environment	Temperature: 0 to 70°C (35 - 150°F); Humidity: 20 to 80% RH (non-condensing)	

LIF-200 TCP/IP LAN Gateway is an inexpensive way to connect NC-100s and other RBH devices to a host or other hardware via the Internet or a local/wide area network. Reliable, field proven architecture makes for easy configuration and use. Automatic discovery software is included. Configuration easily performed via internet browser.

Just configure IP address and port number, type in same settings in our software and you are ready to communicate. For complex configurations a variety of adjustable settings are available.

LIF-200 Universal TCP/IP Network Gateway

RBH - ACCESS CONTROL

AxiomV™ Edition Comparison

Edition	PROFESSIONAL EDITION	ENTERPRISE EDITION
Data Storage	MSDE, MS SQL Express Edition 2005	MS SQL Server 2000, 2005
Automated SQL Server Installation	Yes	No
Access Points Supported	256	256, 512, 1024 ... Unlimited
Communication Servers (Included)	1 (1)	Unlimited (1)
Networks per Comm. Server	128	256
Full Function Clients (Included)	5 (5)	Unlimited (10)
Single PC (all in one) installation	Yes	Yes
Server components on multiple PCs	No	Yes
Dynamic Mapping	Yes	Yes
Hot Stand-by	No	Available
Automatic "Fail-over"	No	Available
Load Management	No	Available
Active Directory Interface	No	Available
O.P.C. Interface	No	Available
High Availability communications	Available	Available
Data Import/ Export Wizard	Available	Available
Interactive Guard Tour	Available	Available
Asset Management	Available	Available
Asset Tracking	Available	Available
Asset/Person Location	Available	Available
Badging PhotoID and Design	Available	Available
Wandering Patient Monitoring	Available	Available
NVR Module	Available	Available
CCTV / DVR Integration Module	Available	Available
Custom Report Designer	No	Available
Automatic Report Generation	Available	Available
Visitor Management	Available	Available

AxiomV™ compatible with any reader technology and many, many brands

LONG RANGE RFID
MAGNETIC STRIPE
VEHICLE BARCODE

BARCODE
WIEGAND
KEYPADS

MIFARE PROXIMITY BIOMETRIC iCLASS

HID PARTNER

WAVETREND - RFID TRACKING

WAVETREND - RFID TRACKING

Executive Team

Ken Moss (48) Executive Chairman

Ken is a successful entrepreneur and manager in the IT sector with over 20 years experience at software and hardware companies in the UK and Continental Europe. Previous roles were COO of Technology plc sold to Fujitsu and European S&M VP of Accent Technologies floated on NASDAQ. Latterly, as CEO and Chairman of Bytech Ltd, a provider of high-end software solutions, he managed the company through a period of dramatic growth and its sale to Avnet Inc, where he became European President. During Ken's tenure, Avnet Inc's turnover grew seven-fold to close to $1bn and became IBM's first pan-European business partner. Ken also holds 2 other chair positions.

Chris Bishop (46), Chief Executive Officer & Director

Chris Bishop joined Wavetrend in January 2005 as EMEA Sales Director and in August 2005 appointed CEO. Prior to joining Wavetrend, Chris worked for QinetiQ, a major science and technology provider in the defence and security market. During his career he has delivered leading edge solutions for transport, health, government, defence, media and corporate customers. He lived and worked in Silicon Valley, California working for SGI and brings a wealth of professional experience and knowledge to the company.

Stephen Harvey (47), CFO & COO

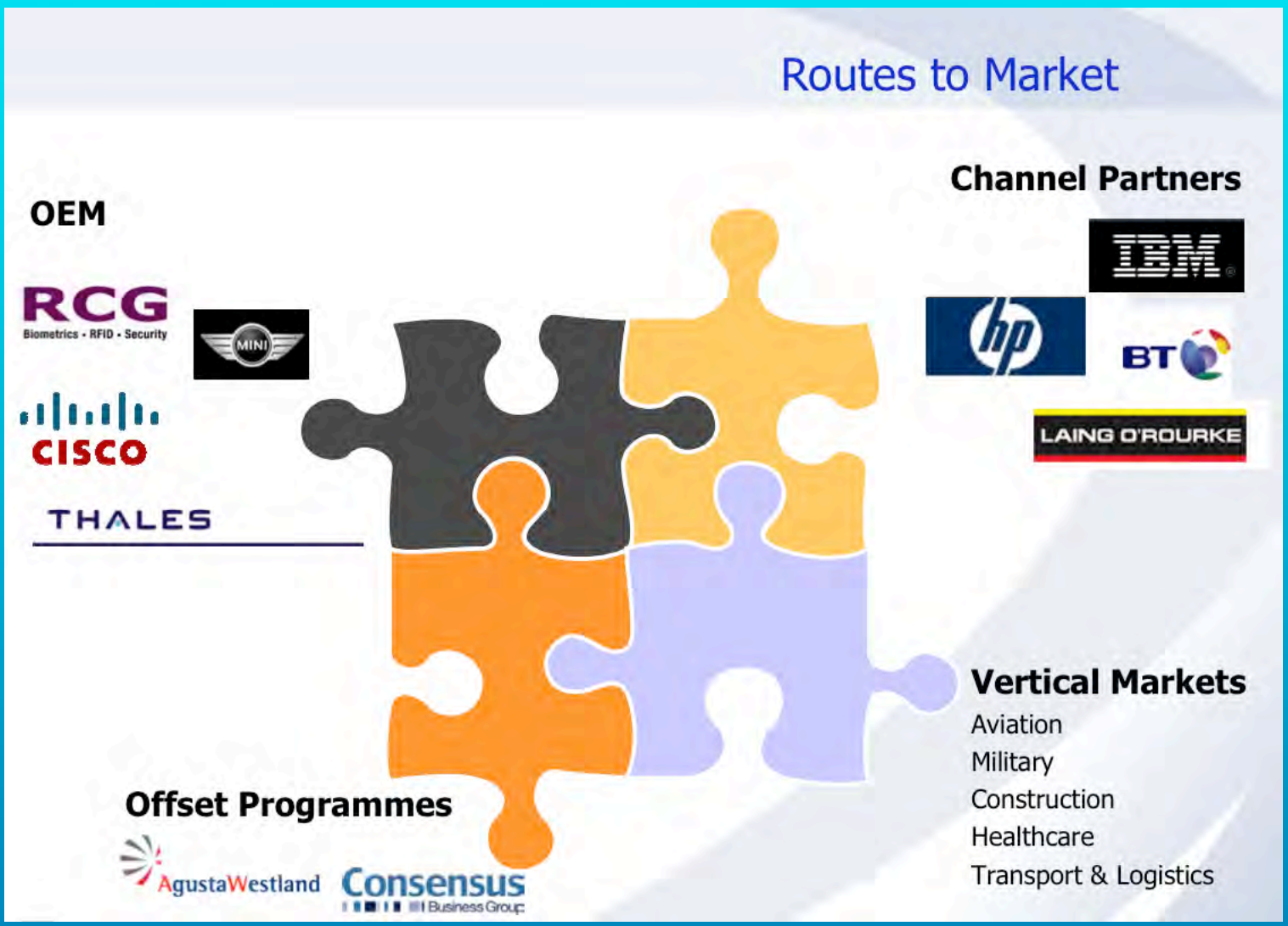
Stephen is a qualified accountant that has operated at CFO, CIO, COO & CEO levels as well as creating and driving people strategies at the highest level (was once voted the top HR Director in the country). He has been involved in growing companies such as Microsoft from £17m to over £1bn, being a key member of the Executive team for 10 years. Virtually the whole of Stephen's career has been spent dealing with the challenges of growth in an ever changing world. He is passionate about technology and how it change the way that the world works, and comes with a wide ranging commercial background with extensive experience of IT, retail, food manufacturing and engineering as well as being an active board member of the NSPCC Corporate Development Board, and was a trustee of The Work Foundation.

WAVETREND - RFID TRACKING

Wavetrend Profile

- Founded in 1999
- 56 man years of R&D
- World-wide network of accredited partners
- Second largest installed base of active RFID
- Currently 34 employees
- Proactive IP program
- Outsourced manufacturing

WAVETREND - RFID TRACKING



WAVETREND - RFID TRACKING

World Class Partners

IBM Business Partner

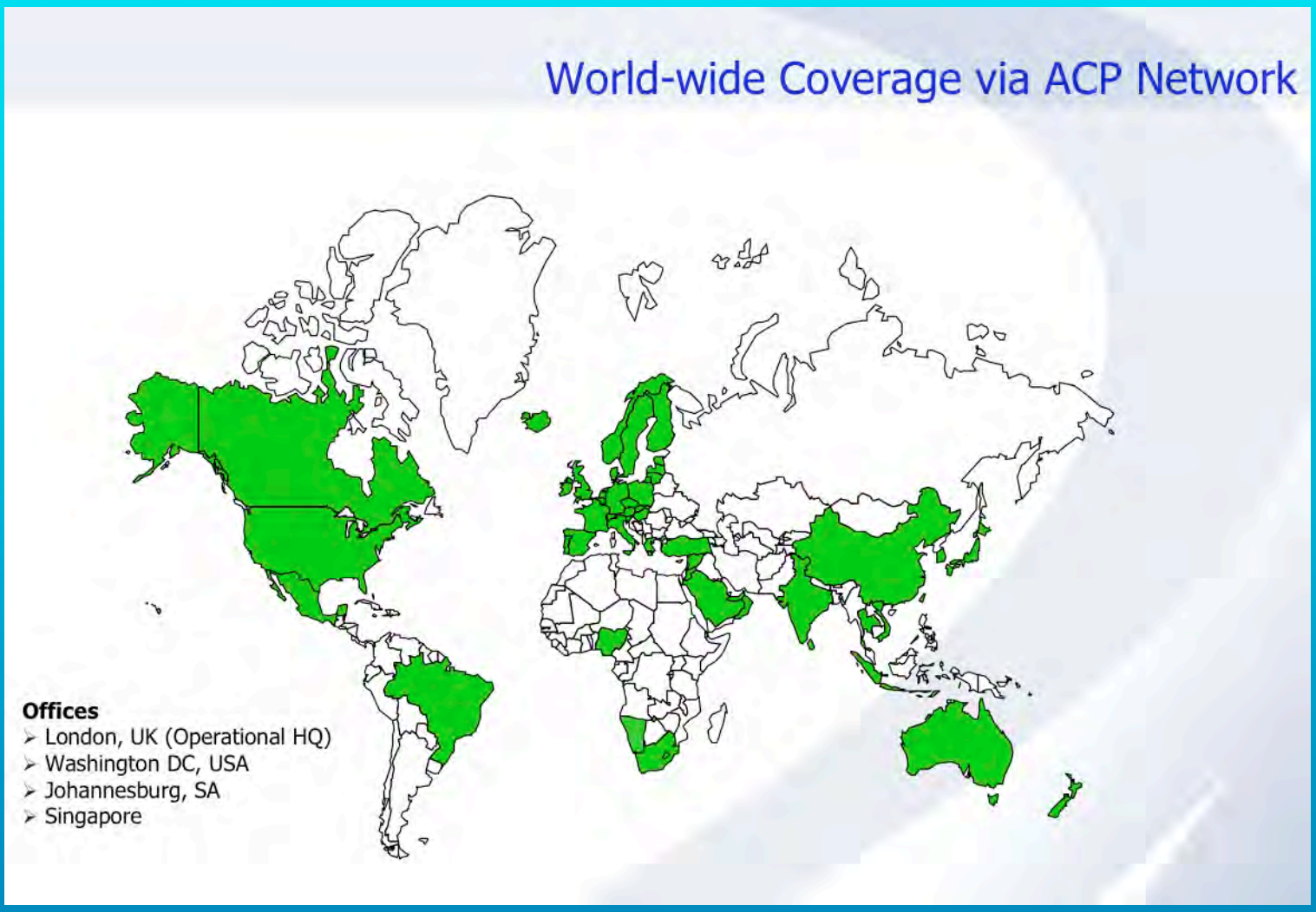
QinetiQ

RadiantWave
Delivering RedPrairie RFID Solutions

ISIS
The eye in technology

TransQuest

WAVETREND - RFID TRACKING



WAVETREND - RFID TRACKING

Strategic Relationships

HERIOT WATT UNIVERSITY

- Exclusive world-wide license for long range Active RFID patent, enabling "speak when-spoken-to" capability across multiple frequencies; 433Mhz, 868MHz, 915Mhz & 2.4GHz
- Exclusive world-wide license for high gain, low noise antenna patent
- First refusal on new patents and technology focused on RFID
- Gap year program for top students
- Access to leading professors and scientists in the field of RF

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Active RFID Products

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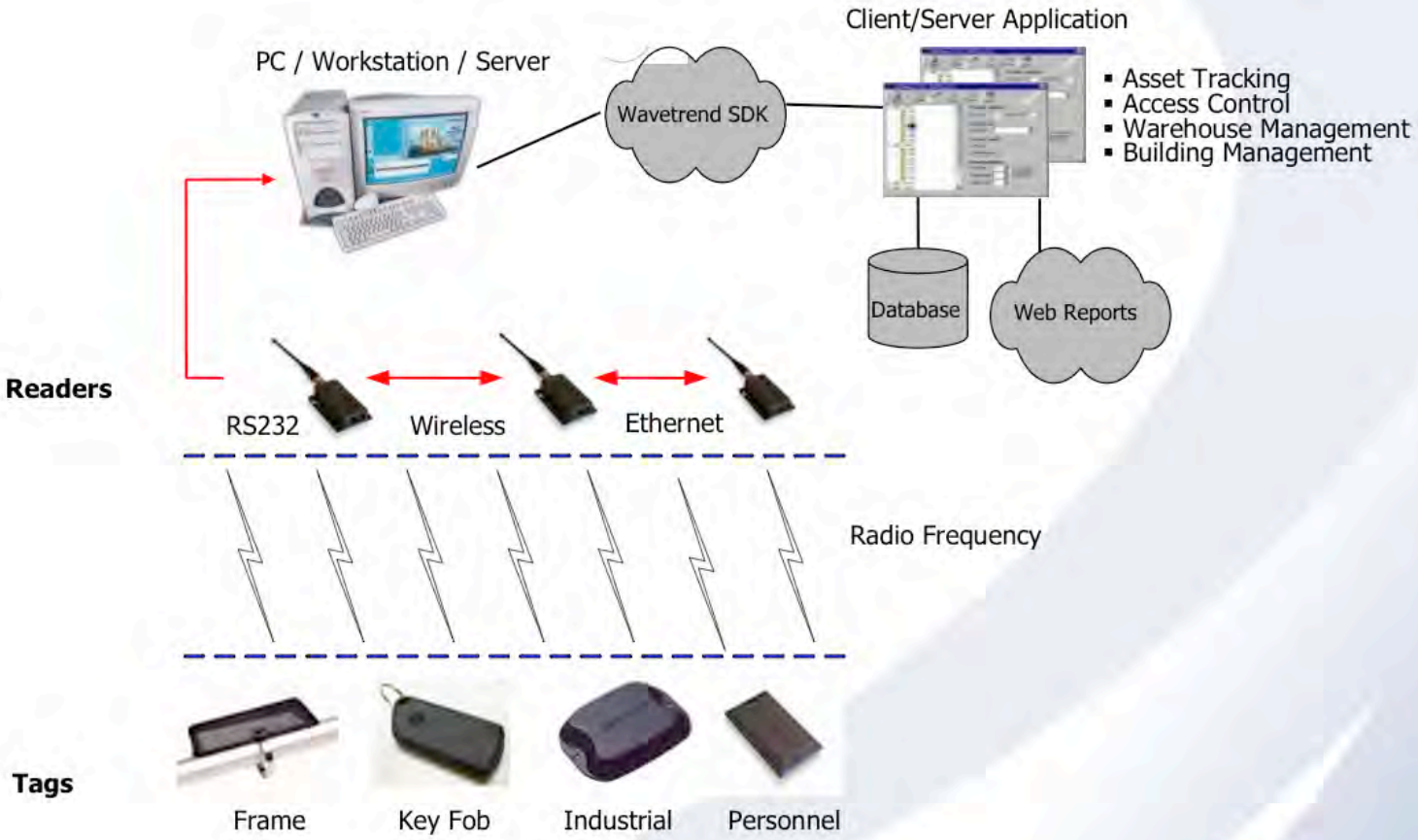
System Architecture



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Certification & Standards

Certification	Description	Countries
CE	Health & Safety certification	15 EU member states plus Norway, Iceland & Lichtenstein
FC	Controls emission limits for exposure to RF FCC Part 15 covers low power unlicensed transmitters.	US & Canada
C-Tick	Certification for Electromagnetic Compatibility (EMC)	Australia & New Zealand
iDA SINGAPORE	Certification for wireless and RF equipment	Singapore
EMC Electromagnetic Compatibility	QinetiQ certified to UK Defence Standard 59-41	International

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Certification & Standards

Certification	Description	Countries
ATEX	Certification for equipment and protective systems which may be used in areas endangered by potentially explosive atmospheres. Certification in process.	European Union
HERO Hazards of Electromagnetic Radiation to Ordnance	Hazards of Electromagnetic Radiation to Ordnance. Military certification for use of Wavetrend products in proximity to ordnance.	US - Dept. of Defense
Intrinsic Safety	Products are certified as safe for use in explosive gas atmospheres both above and below ground (Rating Ex ia i/ii T4)	South Africa
SAR Specific Absorption Rate	In accordance with the recommendations of the International Commission on non-Ionising Radiation Protection (ICNIRP) Relates to medical fields (use near pacemakers)	International

WAVETREND - RFID TRACKING

Understanding the Benefits of Active RFID for Asset Tracking

RFID technology is available in two main types: Passive RFID, where the tag is small, low cost, low range and relies on the reader or interrogator to provide the energy to power the tag; and Active RFID, where the tag is larger, offers greater detection range and rich data capacities because it contains its own power source -a battery.
1. Aberdeen Group
2. IDTechEx. (2006) Active RFID 2006 - 2016
3. Ibid
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Understanding the Benefits of Active RFID for Asset Tracking
How companies can address their auto-identification challenges with active RFID technology

How companies are choosing active RFID solutions to unlock the ROI value

Executive Summary

Sales of Active RFID systems grew to $0.74 billion in 2007 and are projected to grow to $7.07 billion by 20 7. The primary contributor to this growth is the need for Real Time Location Systems (RTLS). Other contributors to the growth of active RFID technology are:

Requirement for total asset visibility for assets or goods as they move through the supply chain. There is an increasing need for more visibility and more data about those assets and their condition as theyíre moving through production facilities, between sites, between carriers and in commercial buildings.
Strong market demand for asset and people tracking. Factors driving this demand are safety and security, competitive cost reduction, and customer service requirements. Specifically, more emphasis has been placed on visibility due to the threat of terrorism and local epidemics or global pandemics.
Active RFID is used in markets such as healthcare, commercial and industrial corporations for access control and tracking of valuable or critical assets.
As the demand for active RFID technology expands across a wide range of vertical markets, the cost of the tags and systems has been reduced over the last several years.
Active RFID technology is ideal for tracking of high-value items and repeated

use in supply cycles. The low-consumption power requirement extends the battery life of active RFID technology up to seven years which in turn dramatically reduces the total cost of ownership.
Development of Ubiquitous Sensor Network environments where large quantities of active RFID tags with sensors are networked in commercial establishments, distribution centres and in healthcare facilities providing real time data of asset conditions and status.
The amount of commercial interest stems from the growing need for organisations to track and trace their high value assets in real time. There is a compelling reason behind this interest: 48% of enterprises mobile asset operations consume 5% or more of corporate revenue . Understanding where oneís assets are and, in some cases, what their condition is can unlock cost savings that enable an RTLS system to deliver a return on the original investment in one to two years2 .

The executive who must analyse and decide on the best RTLS solution to employ has an unenviable job. Currently there are approximately 00 vendors3 to choose from, each promising that they offer the leading solution. The choice can become more confusing when attempting to gain an understanding of the technology underpinning the available RTLS solutions: Radio Frequency Identification (RFID).

Active RFID is generally considered the best technology for RTLS applications due to the long tag detection range offered and ability for the tags to transmit on their own accord on a regular basis. RTLS systems typically triangulate a tagís position when three or more readers pick up the tag signal or will indicate a tag as being in a particular zone depending on which reader(s) detect it.

However, does one choose an active RFID system that uses Wi-Fi over one that uses Zigbee or Bluetooth? Or is so-called ëconventionalí active RFID (where small transmitter tags communicate with readers using highly optimised but non-standardised data formats) the better option? Which radio frequency is the most appropriate for the tags to transmit on? How accurately should the system locate an asset? How much and what type of data must the tag transmit?

Understandably, the choices can be confusing and no simple answer exists. Yet thousands of companies from SMEís to Multinationals and government organisations worldwide are today successfully using active RFID to track and manage their assets, improve their usage and control, improve their security, automate their processes and increase their productivity.

This White Paper will examine the options and choices available today and show how active RFID solutions can deliver sustainable ROI and meet customer demands without requiring excessively expensive or complex technologies.

Considerations for an RTLS System

Before committing to any particular system, the decision maker must evaluate a number of important considerations. Doing this will enable a true calculation of the total cost of ownership and the ability to then recoup the investment as quickly as possible through choosing the most appropriate RTLS system.

1. Why is there a need for an RTLS system?
While the concept of knowing where all the organisationís assets are right now, together with the added benefits this knowledge brings, is an enticing one, the ROI will be maximised in the shortest possible time if the RTLS system addresses specific needs within the business and the correct auto-identification technologies are employed. Reducing shrinkage, locating critical equipment quickly, utilising assets to the fullest, identifying attempts to remove or tamper with assets, or automating labour intensive systems are all valid reasons for implementing RTLS systems provided the cost saving over the life of the RTLS system is greater than the total cost of owning it.

2. What will be tracked and what will the benefits be?
In an ideal world an RTLS system would use an active RFID tag which is very small and flat in size, that works consistently irrespective of environment and orientation, while offering a very long battery lifespan, and costing just a few cents. In reality, until electronic and battery technology progresses significantly, active RFID tags will be relatively large, expensive and only suitable for use with assets that can accommodate them.
When evaluating the technology platform used by the RTLS system, it is useful to answer these questions:

A. Does the vendor offer a range of tags that have the right shapes and sizes to be attached to the asset?
B. Will the tag(s) survive the environmental conditions its assigned asset will be routinely exposed to?
C. Do the tags conform to safety standards demanded by the environment? Intrinsic safety certification may be required and the components and materials used in their construction must conform to all applicable health and safety standards.
D. Active RFID tags emit radio signals and thus must conform to the relevant ETSI, FCC and/or national standards applicable in the country of deployment. The relevant certificates of legal conformance, human safety (Specific Absorption Rate or SAR certification) or test reports proving non-interference with sensitive electronic equipment should be readily available.
E. Likewise, some vendorsí readers/interrogators will emit radio signals and these too must conform to all relevant standards and safety certifications.
No vendor may be able to offer tags that conform to all your requirements so their ability and willingness to customise the tags to suit the environmental, legal, safety and industry specific requirements is another consideration.

A true, comprehensive asset tracking system will very likely have to incorporate multiple auto-identification technologies, from bar codes to passive RFID and active RFID to offer a truly comprehensive solution. The software solution that controls and manages the RTLS system should be able to accommodate other auto-ID technologies so that the unique benefits of each can be utilized.

3. How accurately must assets be located?
If you merely need to know that an item is on site, then employing an expensive system to tell where precisely it is on site is a waste of money and will reduce the ROI achievable. Consider carefully how accurately assets must be located to achieve the business objectives and then select the RTLS system that provides that level of accuracy.
It is commonly assumed that an RTLS system must provide tag location data in two or three dimensions, usually by means of triangulating a tagís position using multiple readers (see the panel alongside for an explanation on how this is done). Much is made of the accuracy of one system over another, but while knowing an assetís location to within a few centimetres sounds impressive, does the business case truly warrant that level of detail?

A very cost effective alternative to triangulation is the use of ëzonesí in RTLS systems to locate assets. A zone can be defined by logically grouping one or more readers together in the software and it can be as small as a single room or it can cover an entire site. The system will not identify specifically where in the zone the asset is, but merely that it is in there. ëZonalí RTLS systems do not require a dense network of readers or WiFi access points with overlapping read ranges as triangulation RTLS systems do, thus significantly reducing the infrastructure costs.

4. Where will the system be installed?
The environment that an RTLS system is installed in plays a crucial role in determining how the systemís infrastructure must be installed and configured to meet the operational requirements demanded of it. In some cases, it may not be physically possible to achieve the required level of performance; such is the nature of radio signals.

Different radio frequencies have different properties and characteristics. No one frequency will ever be ideal for all the myriad of applications for RFID so the choice of hardware vendor will have to include analysis of the frequencies they operate on. For RTLS applications the frequencies most commonly available are 433, 868 & 9 5 MHz (Conventional active RFID), 2.45 GHz (Wi-Fi RFID) and ñ 0 GHz (Ultra Wide Band RFID). Lower frequencies such as 433 MHz operate very well in crowded environments where objects and people interfere with the direct line of sight between the tag and reader, offering long range if required. Higher frequencies, such as 2.45 GHz and higher, offer higher data transmission speeds but transmit in narrower beams, making them ideal for data intensive tag transmissions and more precise determination of the incoming signalís direction, but far more susceptible to interference by objects in the

environment, particularly where things and people move around ñ offices, hospitals, warehouses, container yards, etc.

Another important consideration is the level of competing signals at the frequency used by the RTLS systemís hardware. The more devices there are using the same band, the greater the chance of data loss through transmission collisions and corruptions. Restrictions imposed by ETSI and FCC mean that active RFID tags cannot emit strong signals and could be drowned out by high levels of ëenvironmental noiseí caused by competing signals or other systems.

5. How many tagged items will there be?
The more tagged items there are in any one area, the greater the number of transmissions that will be emitted per second. These transmissions also add to the ënoiseí levels in the environment, and can interfere or ëcollideí with each other. All major RFID vendors implement anti-collision methods to reduce the chances and effect of these collisions but there are limits to the number of tag messages that can get through to a reader in any one second.

Again the transmission capabilities and frequency used by the RFID hardware must be considered. For systems tagging thousands or tens of thousands of assets, it is crucial that the tag signals are kept as short as possible to enable regular transmissions as often as every second or else the transmit rate must be reduced to help preserve a useful battery life span. Where possible the tags should use a frequency least affected by other devices and the environment itself to minimise the effects of RF noise.

A tag that signals every few minutes or hours cannot truly provide the ëreal timeí data that a true RTLS system demands. However, it is true that not all asset tracking or protection systems require ëreal timeí data ñ an item in a warehouse or a painting on a wall may not move for weeks or months and the only time the tag must signal is when it does move. The integration of movement sensors into RFID tags can enable them to transmit infrequently when at rest, but rapidly when on the move, thus lengthening battery life but still ensuring rapid detection when changing location.

6. What will the true costs be?
Many persuasive cost saving arguments for each vendor exist: Wi-Fi tags offer the chance to use an existing Wi-Fi network access point infrastructure, thus apparently minimising infrastructure costs when compared to active RFID systems that require readers to be installed. However, conventional active RFID vendors offer tags that are as much as one fifth of the cost of Wi-Fi tags, with battery life spans up to three times longer than Wi-Fi tags.

The lifespan and transmit rate of the tags offered by the vendor of choice are important considerations when calculating the costs involved with an RTLS system. Apart from the up front costs of attaching tags to assets, if the assets will need to be retagged, or tag batteries replaced, after a few years, the costs in hardware and manpower to

achieve this must be considered as part of the total cost of ownership.

a. How long must the tag last? Typically a 3-5 year life span satisfies most applications as most assets have a matching commercial or useful life span, however some assets such as vehicles or containers will have life spans exceeding 0 years. A systemís total cost can significantly increase if assets must be re-tagged one or more times, or if the batteries in each of the deployed tags must be replaced.
b. How ëreal timeí must the RTLS or asset tracking system be? A tag that offers a suitable life span but only if it transmits once every few minutes is not going to offer a ëreal timeí location system. RTLS systems used for security purposes will need a response to an unauthorised event within seconds, not minutes. Assets passing through a loading bay door have again just a second or two to register that they are leaving the warehouse and being loaded onto a specific vehicle. The options for reading tags in real time, particularly those that can move at speed past the reader, require either beacon tags which transmit repeatedly from sub second up to 2 second intervals or receive and respond to a ëwake-upí signal from the reader within milliseconds. This returns to the question above ñ what is the cost impact of the inevitably reduced battery life spans if the tag must transmit its data with rapid repetitions?

By properly evaluating all the questions above, it will be easier to answer the most important question: Who offers the best solution?

The Choices Available

The various vendors of active RFID technology provide hardware and solutions based on three main types of active RFID technology:

1. Conventional Active RFID (300 ñ 915 MHz / UHF band)
The majority of active RFID systems deployed to date make use of a transmitting device (tag or beacon) to send a unique ID number to a receiver or network of receivers. The most commonly used frequencies are 433 MHz, 868 Mhz (Europe) and 9 5 MHz (USA). 433 MHz is the most common freely available & unlicensed UHF frequency worldwide so many key vendors have standardised on it. Most vendors use their own proprietary protocols for transmitting the tag data thus being able to minimise the data transmission length and so maximise the tag battery lifespan. The functionality and operation of the hardware differs between vendors, with the maximum detection ranges offered being stated from 00 metres to over km. Conventional active RFID tags generally perform with exceptional battery life expectancies and lower costs than the other types of active RFID technology listed below, and have had the broadest deployment across all market sectors worldwide.

2. Wi-Fi RFID (2.45 Ghz)
In recent years, as Wi-Fi networks have become ubiquitous, some vendors have provided tags that work with the IEEE 802. x standard. The key advantages are seen as being the ability to use existing Wi-Fi infrastructure to implement RTLS systems based on Wi-Fi tag technology, and the argument that Wi-Fi RFID is a ëstandardised technologyí. Disadvantages include reduced tag lifespan due to the increased data overhead of using the 802. x protocol and resultant increase in power consumption, the lack of uniform usage at the 802. x standard by vendors and the use of proprietary tag activation systems, all in effect making each Wi-Fi vendorís hardware as proprietary as any conventional Active RFID vendor. Wi-Fi active RFID offers a maximum range of around 00 metres.

3. Ultra Wide Band or UWB RFID (uses broad band of frequencies in the microwave band)
With the release of a broad spectrum of microwave frequencies by the FCC in 2003, UWB technology is now available for deployment with RTLS systems. The key advantage of UWB is the very precise locating of a tag within a 3 dimensional space. The key disadvantage of UWB is the very high cost of the infrastructure as compared against all other types of active RFID technology. UWB offers a maximum range of around 50 metres.

In addition to the three main technology types listed above, other technology options are emerging in the active RFID arena, such as Zigbee (IEEE 802. 5.4), Bluetooth and GPS.

Zigbee offers low power, bi-directional data communications via a mesh network, with range up to around 70 metres and thus can be employed in areas where traditional active RFID is used, but is not ideal for identifying location nor is it widely available as yet. The Zigbee standards for RFID are still not fully developed.

Bluetooth, the short-range wireless networking standard most commonly found in mobile phones and computer accessories, is also looked towards for providing a

platform for asset tracking applications. Its shorter range (approx. 0 metres), slower data transmission rate than Wi-Fi and very high power consumption mean that it might only be suitable for niche applications where long range and battery life-spans of days or less are not critical factors.

GPS is already widely employed for vehicle fleet and shipping container tracking. Itís relatively high-cost, high power consumption and difficulties with working indoors make it unsuitable for the large majority of asset tracking and monitoring applications.

To illustrate the differences in costs between systems using the three main active RFID technologies listed above, cost calculations have been prepared for the same application. In recent presentations, a Wi-Fi vendor published details of a case study for tracking 600 infusion pumps in a 20 000 square metre hospital. The general experience in selling RTLS systems would indicate that the cost of hardware versus software and services is

a ratio of 2: , but in these calculations we have assumed that software and services are consistently priced.

The Wi-Fi proposition:

The above system cost £79 000 to install & commission. WiFi tags are typically priced at circa £60 each and the rest of the costs will consist of software and ìSite Calibrationî, which is the commissioning process. With all available pricing information, accepting the Wi-Fi vendorís claim that an existing 802. x network requires no modification or additional access points; no other hardware such as tag activators are required, and some careful assumptions this can be broken down as follows:

600 Tags = £ 36 000
Software = £ 30 000
Services = £ 3 000

Total = £ 79 000

The Ultra Wide Band proposition:

The same system installed using Ultra Wide Band hardware, with a typical tag price of £ 00 and reader price of £ 5 000 for four, and assuming that up to 5 readers can be commissioned per day at a rate of £500 p/day, could calculate as follows:

600 Tags = £ 60 000
50 Readers = £ 87 500
Software = £ 30 000
Services = £ 8 000

Total = £ 295 500

The Conventional active RFID proposition:

The same system installed using Wavetrendís active RFID hardware with a typical tag price of £ 6 and WiFi enabled reader price of £550, could calculate as follows:

600 Tags = £ 9 600
26 Readers = £ 4 300
Software = £ 30 000
Services = £ 6 000

Total = £ 69 900

WAVETREND - RFID TRACKING

Provided the assumptions for no further hardware are accepted, conventional active RFID offers the best cost comparison even with the lower infrastructure cost advantage that Wi-Fi RTLS offers.

Ultra Wide Band is best suited to applications where the very accurate location of tagged items is paramount, and as such will very seldom be considered for a project together with conventional active RFID systems which cannot match the location capabilities of UWB.

Wi-Fi RTLS Ultra Wide Band RTLS Wavetrend Active RFID
Typical Retail Tag Price £50 / $ 00 £ 00 / $200 £ 6 - £38 / $29 - $68
Typical Battery Life-Span vs 3.75 years / 5 min rate 5+ years / 5 sec rate 7+ years / 5 sec rate Transmission Rate 2.33 years / 30 sec rate 5+ years / .5 sec rate
Standard Method(s) Long transmit interval, Long transmit interval, None typically required, Employed to Increase Immediate activation by Immediate activation by Increased transmit interval or Battery Life movement sensor or activator movement sensor or activator activation by motion sensor available as standard Battery Options Replaceable Replaceable Single Use Rechargeable Larger batteries in some tags allow longer operating lifespan Max. Standard Tag 00m 50m 500m
Read Range Operating Frequency 2.45GHz 2.45GHz & 433MHz 6 ñ 8 GHz
Communication Standard 80 . x Own Standard adopted by Own Standards (2)
CE for EU UWB standard Patented Proprietary Technology Cisco CCX spec Standardised, but is only Readers & Tags Proprietary Activator Signals vendor complying to EU standard. Open Hardware Platform Tag Activators (some vendors) = Enhanced Access Points Own Software Solution 20+ software solution (some vendors) vendors use Wavetrend
Own Software Solution hardware (each vendor) Length of RFID Experience 9 years (founded 999) 5 years (founded 2003) years (founded 997)
Estimated Deployments & Unknown 200+ 2000+ Tags Shipped to Date Approx 200 000 tags to end unknown Million tags 2002 - 2007
(where known) 2006 Key Markets Predominantly Healthcare, Manufacturing & Automotive Security & Access, Transport Manufacturing, Transport ñ Work In Progress (WIP) & Logistics, Mining, Oil & & Logistics Gas, Healthcare, Defense No. of Tag Types Typically 2 ñ 3 per vendor 2 9 Sensory Capabilities Motion, Temperature, User Button Motion, Tilt, Shock, Tamper, User Button(s) Temperature, Tamper, User Button Open Hardware Platform for No No Yes Software Solution Providers? Table 1 - Comparative Chart of Key Active RFID Technologies 8

In evaluating technologies for implementation, it is important to consider all factors in making a final decision. Analysis factors should include:

A. Expected lifetime of tag versus asset lifetime and any further costs associated with retagging assets in future.
B. Weighing the advantages each vendorís RTLS solution offers against the business problem at hand to determine which technology and software solution is the best to meet the needs of the project.
C. Consider whether Wi-Fi RTLS triangulation will need additional access points of activators, which will add extra cost to implementation.

D. Comparison of all product attributes for consideration: battery life span, tag detection range, and selection of different tag shapes and capabilities available to attach to meet the tracking requirements of the assets in the specific application.

Standards in active RFID

There have been many references to proprietary technology in this paper. The truth of the matter is that in practical terms, every active RFID vendor is proprietary in one form or another. While standard communication protocols may be employed for transmitting data (802. x, GSM/GPRS, ISO 8000-7 433MHz et al), the data structure may not be standardised, vendor proprietary hardware may be required to ensure the system functions as required, the vendorís own software solution may be the only one capable of working with the technology they provide, or the published standard may be proprietary to one vendor, requiring other vendors to potentially pay up to millions of pounds for the right to produce only certain products using the standard, restricting the number of vendors offering the standardised technology.

Conclusion

New standards will continue to emerge over time, and eventually multiple open standards, tailored in terms of frequency, data structure and communication protocols will appear, making it easier to understand the myriad of options in active RFID.

A truly open active RFID standard would at minimum allow any vendorís tag to work with any vendorís reader on any vendorís RTLS software package seamlessly. Each future standard will almost certainly be aimed at specific market verticals or specific applications, by combining the best RF frequency, protocol and data structure for that application or vertical. The need to evaluate each standardised systemís benefits against the business need will not be removed. New, improved technology will continue to be developed thus forcing the further development of standards. Proprietary active RFID technology designed to cater to very specific or niche requirements will continue to exist.

In the meantime, the decision about which active RFID vendor to use to meet the immediate RTLS requirements that any company or organisation has today will have to be made by asking the critical questions posed in this paper and careful evaluation of each vendorís technology, software solution, deployment experience and user case history.

Wavetrend Technologies Limited (ìWavetrendî) is a world leader in the deployment of active Radio Frequency Identification ìRFIDî solutions. These innovative solutions enable enhanced management of people, assets, and logistics for improved business performance, while optimising customer return on investment and payback time. Through both its direct professional Service teams and its global network of accredited application and strategic integration partners, Wavetrend delivers a broad selection of proven, superior-performing active RFID solutions to customers around the world. These

solutions focus on vertical industries such as: transport, automotive, defence, healthcare, aviation, mining and construction.

The company has invested in establishing a strong management team, and has the breadth and experience to take advantage of its world-class products and its growing reputation in a rapidly growing market. With a proven track record of delivering fast turnaround on large-scale deployments, and demonstrating a level of creativity to solve seemingly impossible business challenges, Wavetrendís scalability of supply and affordability make it an ideal technology choice for companies who are considering RFID implementation.

The RFID-related business segment is growing rapidly and the active RFID segment has been forecasted to grow the fastest by many industry analysts -- due to the need for asset visibility in real-time, long-range Global Positioning Systems sensing in a Ubiquitous Sensor Networks ìUSNî environment.

At the core of the groupís technology is an open platform architecture that is highly scalable and simple to integrate. Wavetrendís active tags contain their own power source, enabling real-time asset monitoring and tracking over distances from one metre to several kilometres. Wavetrendís tags are robust and market proven and have an internal battery life of up to ten years with a read range up to five kilometres, an industry best. Wavetrendís active RFID technology is non-competing for 2.45 GHz bandwidth environments such as hospitals and commercial establishments that have intricate Wi-Fi networked hardware (PDAís, notebooks, VoIP etc.).

The addition of Wavetrend sensors to detect, for example, vibration or changes in temperature, enables assets to communicate their whereabouts and condition using secure transmission protocols for maximum security. Recent projects have been successfully deployed in Security, Defence, Health, Transport, Mining and Oil and Gas, enabling assets and people to communicate within their environment. Wavetrendís primary focus for 2008 will be to work with its client on specific business challenges and provide enhanced solutions that meet those challenges to deliver a measurable ROI.

For an analysis of your specific application, contact Wavetrend today to learn more about our RTLS asset tracking solutions.

SuperScanner

Hand-Held Metal Detector

World Renowned Hand-Held Metal Detector
Proven to accurately detect concealed metallic Items, Ferrous and Non-Ferrous.

FEATURES

- One switch operation
- Ultimate sensitivity
- Does not require adjustments
- Rugged, high-impact ABS case with reinforced coil compartment
- Detects medium sized pistol from 9”; large knife from 6”; razor blade and box cutter from 3”; foil-wrapped drugs and tiny jewelry from 1”
- Large 10” scan surface for quick, thorough scanning
- No tools required to change 9V battery
- Sharp audible alarm and bright red LED light indicates the detection of metal
- Momentary push button temporarily eliminates detection of nearby ambient metal such as rebar, metal walls, etc.
- Green LED light indicates ON; Amber LED indicates LOW BATTERY; Red LED indicates ALARM

APPLICATIONS

Airports
Prisons
Correctional Facilities
Public and Private Buildings
Schools
Stadiums/Concerts
Sporting Events
Nuclear Facilities
Transportation Terminals
Loss Prevention
Corporate Security
Historical Landmarks

ASAP - HANDHELD SCANNER

Operating Temperatures
-35°F (-37°C) to 158°F (70°C)
Humidity
To 95% non-condensing
Operating Frequency
93 kHz
Audio Frequency
2kHz Warble
Tuning
Automatic
Indicators
Speaker
LED Alert Lights

Green: Power ON
Amber: Battery LOW
Red: ALARM condition

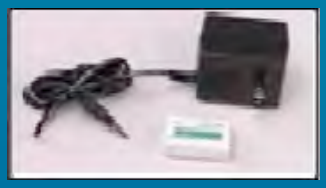
Controls
Power switch (ON / OFF)
Interference Elimination Momentary Switch
Battery
Single 9 volt battery provides up to 60 hours of normal
operation. Optional rechargeable battery provides up to
20 hours on each 12-hour recharge
Dimensions

Width:	3.25” (8.3 cm)
Thickness:	1.625” (4.13 cm)
Length:	16.5” (42 cm)
Weght:	17.6 oz (500g)

Warranty
Limited, 12 months parts and labor

ACCESSORIES

Rechargeable Battery Kit
- Allows recharging without the need to remove the battery.
Battery and Charger 220V



Earphone - Masks outside noise

C. Protective Carry Bag

D. **Holster**

Stadiums and prisons

International Airports

REGULATORY INFORMATION

“Hand-Held Metal Detectors for Use in Concealed Weapon and Contraband Detection.” Meets CE and other international standards for electromagnetic compatibility and safety.

Extensive research has found no information that would indicate the product to have adverse effects on pregnancy or medical devices or magnetic recording media.
D irectives of physicians and medical device manufacturers must be followed.

ASTROPHYSICS - X-RAY MACHINES

XIS-100XDV

DUAL VIEW TECHNOLOGY

Astrophysics inc.

The XIS-100XDV uses Dual View Technology that allows for the viewing of objects from two different angles - an "up shooting" view from beneath the object and a "side shooting" view from the side of the object. The benefit is an improved ability to view odd shaped objects (i.e. triangular or L-shaped), and thus allow the operator to identify potential threats more quickly and easily than a single view system. The tunnel size of 1000 mm (39.4 in) wide by 1000 mm (39.4 in) allows for the scanning of larger parcels at airports, government offices and other applications.

PC-Based System

The XIS-100XDV is a PC-based system, which runs on Windows XP Professional. The XIS combines the latest software and hardware technologies to provide superior image clarity, resolution and processing power.

Networking

The XIS-100XDV is designed to network with other inspection systems using high-speed ethernet TCP/IP data communication. Images from any XIS model can be sent through the network to a central server where they can be viewed, stored, and printed.

Standard Features

- Automatic Edge-Enhancement Imaging
- Automatic Image Archiving - up to 50,000 images
- Automatic Z-number Measurement
- Baggage Counter
- Color and Black and White Imaging
- Density Alert
- Forward & Backward Conveyor Movement
- Geometric Image Distortion Correction
- High Penetration Function
- Horizontal and Vertical Imaging
- Image Review - for up to last 600 images
- Manual Archiving of Images in Bitmap Format
- Manual Archiving of Suspect Images
- Organic & Inorganic Imaging
- Picture Perfect - for improved resolution / penetration
- Print Image
- Programmable Penetration Levels
- Pseudocolor and Reverse Monochrome
- Real Time Image Manipulation
- Self Diagnostics
- Three 17 Inch LCD Flat Panel Color Monitors
- User-Defined Access to Image Archive
- User-Selectable Zoom-In 2X to 32X
- Variable Gamma

ASTROPHYSICS - X-RAY MACHINES

X-Ray Generator

Voltage	160kV - operating at 148 kV
Tube Current	0.7mA
Cooling	Sealed Oil Bath
Duty Cycle	100%
Beam Direction	Horizontal & Vertically Upward

X-Ray Detector

4608 Channels

Environmental Conditions

Operating Temperature	-15° to 40° C
Storage Temperature	-20° to 60° C
Humidity	up to 95% non-condensing

Technical Specifications

Sensitivity	36 AWG
Spatial Resolution	1 mm both Horizontal and Vertical
Penetration	29 mm Steel
Contrast Sensitivity	24 Visible Levels, 4096 Gray Level
Power Requirements	220 VAC +/- 10%, 20 Amps Max. 110 VAC +/- 10%, 30 Amps Max.

Physical Specifications

Net Weight	Approx. 1,700 Kg (3,750 lbs)
Gross Weight	Approx. 1,895 Kg (4,200 lbs)
Tunnel Opening	100 cm (39.4 in) x 100 cm (39.4 in)
Conveyor Type	Belt Type
Conveyor Speed	13.7 m/min.
Conveyor Height	690 mm (27.5 in)
Conveyor capacity	200 Kg Distributed Load (440 lbs)
Dimensions	3150 mm (124") x 1740 mm (69") x 1960 mm (77")

Health & Safety

Complies with all published international standards including the U.S.F.D.A., Center for Devices and Radiation Health standards for cabinet X-Ray systems (Federal Standard 21-CFR 1020.40). Typical leakage radiation is less than 0.1mR/hr, compared with maximum leakage at 0.5mR/hr permitted by the Federal Standard. Film safety guaranteed for high speeed films up to ISO 1600.

Operational Standards

Complies with all published international standards including the U.S. Federal Aviation Administration Standards "Use of X-Ray Systems" (Federal Standards 14 CFR 108.17 and 14 CFR 129.26).

ISO 9001: 2000

Astrophysics Inc is an ISO 9001:2000 certified organization.

Design Policy

Astrophysics Inc. pursues continuous product development and improvement. Astrophysics Inc. reserves the right to make changes in specifications without notice.

Computer Specifications

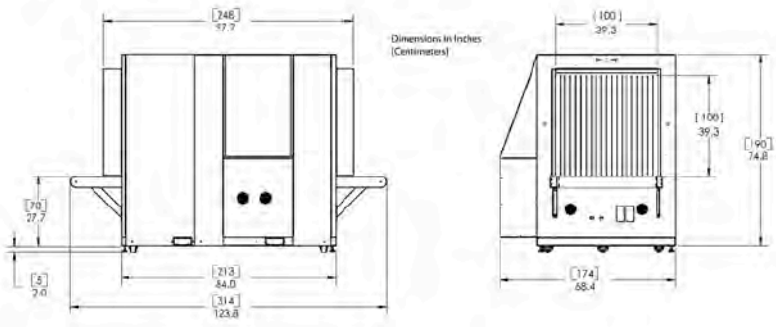
At a minimum: Core 2 Duo 1.6 GHz, 1 GB RAM, 80GB HDD, 256MB VGA, UPS to support PC and electronics.

Video Display

3 pcs, 17 inch, high resolution, low radiation, ergonomic, flicker free LCD flat screen color monitors. Display resolution: 1280 x 1024.

Optional Accessories and Features

- Advanced Continuous Diagnostics
- Available in 1.0m Conveyor Extensions
- Entry/Exit Rollers (1.0m or 1.5m long)
- Exit Table (1.0m long)
- Fourth Monitor - 17 Inch LCD Flat Panel Color Monitor
- Inclined Mortorized Conveyors
- Increased Conveyor Capacity
- Screener Assist Threat Detection
- Screener Training Program
- Threat Image Projection (TIP) Software
- Variable Conveyor Speed



ASTROPHYSICS - X-RAY MACHINES

XIS-100X

Astrophysics inc.

The XIS-100X X-ray System is the ideal solution for screening small parcels for airports, government offices, and other business applications. The tunnel size of 1000 mm (39.4 in) wide by 1000 mm (39.4 in) high is optimized for rapid inspection of small articles, allowing the XIS to inspect them with state-of-the-art imaging.

PC-Based System

The XIS-100X X-ray System is a PC-based system, which runs on Windows 2000 SP4 or Windows XP Professional. The XIS combines the latest software and hardware technologies to provide superior image clarity, resolution and processing power.

Networking

The XIS-100X X-ray System is designed to network with other inspection systems using high-speed ethernet TCP/IP data communication. Images from any XIS model can be sent through the network to a central server where they can be viewed, stored, and printed.

Imaging Characteristics

- *Color* and *Black and White* Imaging
- *Organic* & *Inorganic* Imaging
- *Pseudocolor* and *Reverse Monochrome*
- Automatic *Edge-Enhancement* Imaging
- Automatic *Image Archiving/Retrieval* (25,000 images)
- Image Review - Last 50 Images
- Automatic *Z-number* Measurement
- *Density Alert*
- *Geometric Image Distortion Correction*
- User-Selectable *Zoom-In* 2X to 32X
- Programmable Penetration Levels
- Variable Contrast Level Control
- *Operator Training Program (OTP)*
- *Picture Perfect*
- Dual 17 in. LCD Flat Panel Color Monitor

ASTROPHYSICS - X-RAY MACHINES

X-Ray Generator

Voltage	**160kV**
Tube Current	**0.7mA**
Cooling	**Sealed Oil Bath**
Duty Cycle	**100%**
Beam Direction	**Vertically Upward**

X-Ray Detector

2304 Channels in an 'L' Shaped Array

Environmental Conditions

Operating Temperature	**0° to 40° deg C**
Storage Temperature	**-20° to 60° deg C**
Humidity	**up to 95% non-condensing**

Technical Specifications

Sensitivity	**38 AWG**
Spatial Resolution	**1.25 mm both Horizontal and Vertical**
Penetration	**27 mm Steel**
Contrast Sensitivity	**24 Visible Levels, 4096 Gray Level**
Dose per inspection	**0.1mR Typical**
Power Requirements	**110 ~ 120 VAC, 15 Amps Max. 220 ~ 240 VAC, 10 Amps Max.**

Physical Specifications

Net Weight	**Approx. 1400 Kg**
Gross Weight	**Approx. 1595 Kg**
Tunnel Opening	**100 cm (39.4 in) x 100 cm (39.4 in)**
Conveyor Speed	**13.7 m/min.**
Conveyor Height	**770 mm (30.31")**
Conveyor capacity	**200 Kg Distributed Load**
Dimensions	**3145 mm x 1371 mm x 1961 mm**

Computer Specifications

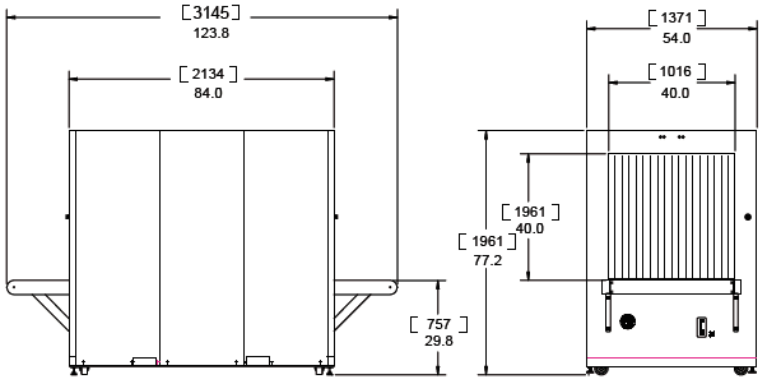
At a minimum: Intel Pentium 4™, 2.8GHz Dual Core, 512MB RAM, 80GB HDD, 256MB VGA Dual DVI, UPS to support PC and electronics.

Video Display

Dual 17 in. high resolution, low radiation, ergonomic, flicker free LCD flat screen color monitors.

Optional Accessories and Features

- **Entry/Exit Rollers (1.0m or 1.5m long)**
- **Exit Table (1.0m long)**
- **Threat Image Projection (TIP) Software**
- **Screener Assist Threat Detection**
- **Screener Training Program**
- **Advance Image Archiving (100,000 images)**
- **Remote Operator Workstation**
- **Network Supervisor Station**
- **Inclined Conveyors**
- **Dual Speed Conveyors**
- **180 kv X-ray Generator**
- **Also available in 1.0m Conveyor Extensions**



Health & Safety

Complies with all published international standards including the U.S.F.D.A., Center for Devices and Radiation Health standards for cabinet X-Ray systems (Federal Standard 21-CFR 1020.40). Typical leakage radiation is less than 0.1mR/hr, compared with maximum leakage at 0.5mR/hr permitted by the Federal Standard. Film safety guaranteed for high speeed films up to ISO 1600.

Operational Standards

Complies with all published international standards including the U.S. Federal Aviation Administration Standards "Use of X-Ray Systems" (Federal Standards 14 CFR 108.17 and 14 CFR 129.26).

ISO 9001 : 2000

Astrophysics Inc is an ISO 9001:2000 certified organization.

Design Policy

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ASTROPHYSICS - X-RAY MACHINES

XIS-1517

Astrophysics Inc.

The XIS-1517 X-ray System is the ideal solution for screening cargo pallets and LD containers for airports. The tunnel opening of 150 cm (59.1") wide by 170 cm (66.9") high is designed to admit all cargo pallets and most LD containers, allowing the XIS to inspect them with high-resolution imaging.

PC-Based System

The XIS-1517 X-ray System is a PC-based system, which runs on Windows XP Professional. The XIS combines the latest software and hardware technologies to provide superior image clarity, resolution and processing power.

Networking

The XIS-1517 X-ray System is designed to network with other inspection systems using high-speed ethernet TCP/IP data communication. Images from any XIS model can be sent through the network to a central server where they can be viewed, stored, and printed.

Standard Features

- Advanced Continuos Diagnostics
- Automatic Edge-Enhancement Imaging
- Automatic Image Archiving - up to 50,000 images
- Automatic Z-number Measurement
- Baggage Counter
- Color and Black and White Imaging
- Density Alert
- Forward & Backward Conveyor Movement
- Geometric Image Distortion Correction
- High Penetration Function
- Horizontal and Vertical Imaging
- Image Review - for up to last 100 images
- Manual Archiving of Images in Bitmap Format
- Manual Archiving of Suspect Images
- Organic & Inorganic Imaging
- Picture Perfect - for improved resolution / penetration
- Print Image
- Programmable Penetration / Contrast Levels
- Pseudocolor and Reverse Monochrome
- Real Time Image Manipulation
- User-Defined Access to Image Archive
- User-Selectable Zoom-In 2X to 32X
- Dual 20 Inch LCD Color Monitors

ASTROPHYSICS - X-RAY MACHINES

X-Ray Generator

Voltage	180 KV - operating at 170 kV
Tube Current	1.0mA
Cooling	Sealed Oil Bath
Duty Cycle	100%
Beam Direction	Horizontally Sideward

X-Ray Detector

2304 Channels in an 'L' Shaped Array

Environmental Conditions

Operating Temperature	-10 to 50 C / 14 to 122 F deg
Storage Temperature	-20 to 60 C / -4 to 140 F deg
Humidity	up to 95% non-condensing

Technical Specifications

Sensitivity	33 AWG
Spatial Resolution	1.5 mm both Horizontal and Vertical
Penetration	31 mm Steel
Contrast Sensitivity	24 Visible Levels, 8192 Gray Level
Dose per inspection	0.25mR Typical
Power Requirements	110 ~ 120 VAC, 15 Amps Max. 220 ~ 240 VAC, 10 Amps Max.

Physical Specifications

Net Weight	Approx. 2725 Kg (6000 lbs)
Gross Weight	Approx. 3055 Kg (6735 lbs)
Tunnel Opening	1500 mm (59.1 in) x 1700 mm (66.9 in)
Conveyor Speed	6.0 m/min.(42 fps)
Conveyor Height	330 mm (13.0 in)
Conveyor Capacity	2000 Kg Distributed Load (2205 lbs)
Dimensions	4800 mm x 2765 mm x 2210 mm 189 in. x 109 in. x 87 in.

Computer Specifications

At a minimum: Core 2 Duo 1.8 GHz, 1 GB RAM, 80GB HDD, 256MB VGA, UPS to support PC and electronics.

Video Display

Dual 20 in. high resolution, low radiation, ergonomic, LCD color monitor. Display resolution: 1280 x 1024; 24 bit/pixel color representation.

Optional Accessories and Features

- Advance Image Archiving (100,000 images)
- Entry/Exit Rollers (1.0m or 1.5m long)
- Exit Table (1.0m long)
- Increased Conveyor Capacity (Up to 3500 Kg)
- Network Supervisor Station
- Remote Operator Workstation
- Screener Assist Threat Detection
- Screener Training Program
- Search / Suspect Station
- 200 kv X-ray Generator
- 320 kv X-ray Generator
- 450 kv X-ray Generator

Health & Safety

Complies with published international standards including the U.S.F.D.A., Center for Devices and Radiation Health performance standards for cabinet X-Ray systems (Federal Standard 21-CFR 1020.40). Typical leakage radiation is less than 0.1mR/hr, compared with maximum leakage at 0.5mR/hr permitted by the Federal Standard. Film safety guaranteed for high speeed films up to ISO 1600.

Operational Standards

Complies with published international standards including the U.S. Federal Aviation Administration Standards "Use of X-Ray Systems" (Federal Standards 14 CFR 108.17 and 14 CFR 129.26).

ISO 9001: 2000

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Design Policy

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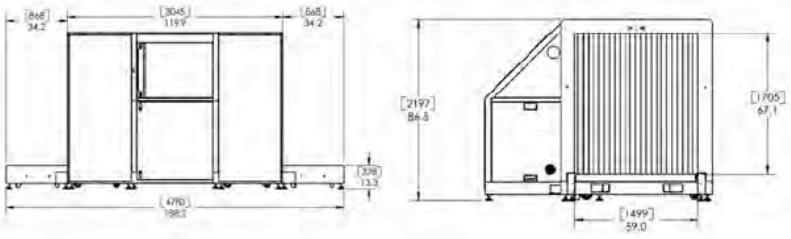
Dimensions in inches [millimeters]



ASTROPHYSICS - X-RAY MACHINES

XIS-222L

Astrophysics inc.

The XIS-2220L Cargo X-Ray Screening System is the ideal solution for screening cargo pallets and all containers for any application. The tunnel opening of 2200 mm wide by 2000 mm high is designed to admit all cargo containers and clearly view them through a high resolution and high penetration imaging and display system.

PC-Based System

The XIS-2220L Cargo X-Ray Screening System is a PC-based system, which runs on Windows XP Professional. The XIS combines the latest software and hardware technologies to provide superior image clarity, resolution and processing power.

Networking

The XIS-2220L Cargo X-Ray Screening System is designed to network with other inspection systems using high-speed ethernet TCP/IP data communication. Images from any XIS model can be sent through the network to a central server where they can be viewed, stored, and printed.

Standard Features

- Automatic Edge-Enhancement Imaging
- Automatic Image Archiving - up to 50,000 images
- Automatic Z-number Measurement
- Baggage Counter
- Color and Black and White Imaging
- Density Alert
- Forward & Backward Conveyor Movement
- Geometric Image Distortion Correction
- High Penetration Function
- Horizontal and Vertical Imaging
- Image Review - for up to last 100 images
- Manual Archiving of Images in Bitmap Format
- Manual Archiving of Suspect Images
- Organic & Inorganic Imaging
- Picture Perfect - for improved resolution / penetration
- Print Image
- Programmable Penetration / Contrast Levels
- Pseudocolor and Reverse Monochrome
- Real Time Image Manipulation
- Self Diagnostics
- User-Defined Access to Image Archive
- User-Selectable Zoom-In 2X to 32X
- 17 Inch LCD Color Monitors

ASTROPHYSICS - X-RAY MACHINES

X-Ray Generator

Voltage	180 kv
Tube Current	440VAC +/- 10%
Cooling	Sealed Oil Bath
Duty Cycle	100%
Beam Direction	Vertically Upward

X-Ray Detector

2816 Channels in an 'L' Shaped Array

Environmental Conditions

Operating Temperature	-10 to 50 C / 14 to 122 F deg
Storage Temperature	-20 to 60 C / -4 to 140 F deg
Humidity	up to 95% non-condensing

Technical Specifications

Sensitivity	32 AWG
Spatial Resolution	1.5 mm both Horizontal and Vertical
Penetration	65 mm Steel
Contrast Sensitivity	24 Visible Levels, 8192 Gray Level
Dose per inspection	0.25mR Typical
Power Requirements	110 ~ 120 VAC, 15 Amps Max. 220 ~ 240 VAC, 10 Amps Max.

Physical Specifications

Net Weight	Approx. 3050 Kg
Gross Weight	Approx. 10000 Kg
Tunnel Opening	2200 mm x 2000 mm
Conveyor Speed	Programmable up to 10m / min
Conveyor Height	300 mm
Conveyor Capacity	4000 Kg Distributed Load

Computer Specifications

At a minimum: Intel Pentium 4™, 2.8GHz Dual Core, 512MB RAM, 80GB HDD, 256MB VGA Dual DVI, UPS to support PC and electronics.

Video Display

At a minimum: Intel Pentium 4™, 2.8GHz Dual Core, 512MB RAM, 80GB HDD, 256MB VGA Dual DVI, UPS to support PC and electronics.

Optional Accessories and Features

- Advanced Continuous Diagnostics
- Advance Image Archiving (100,000 images)
- Entry/Exit Rollers (1.0m or 1.5m long)
- Exit Table (1.0m long)
- Network Supervisor Station
- Remote Operator Workstation
- Screener Assist Threat Detection
- Screener Training Program
- Search / Suspect Station
- 320 kV at 10 mA X-ray Generator
- 450 kV at 10 mA X-ray Generator

Health & Safety

Complies with published international standards including the U.S.F.D.A., Center for Devices and Radiation Health performance standards for cabinet X-Ray systems (Federal Standard 21-CFR 1020.40). Typical leakage radiation is less than 0.1mR/hr, compared with maximum leakage at 0.5mR/hr permitted by the Federal Standard. Film safety guaranteed for high speeed films up to ISO 1600.

Operational Standards

Complies with published international standards including the U.S. Federal Aviation Administration Standards "Use of X-Ray Systems" (Federal Standards 14 CFR 108.17 and 14 CFR 129.26).

ISO 9001: 2000

Astrophysics Inc is an ISO 9001:2000 certified organization.

Design Policy

Astrophysics Inc. pursues continuous product development and improvement. Astrophysics Inc. reserves the right to make changes in specifications without notice.

ASTROPHYSICS - X-RAY MACHINES

XIS-5335

Astrophysics inc.

The XIS-5335 X-ray System is the ideal solution for screening small parcels for airports, government offices, and other business applications. The tunnel size of 530 mm (20.9 in) wide by 350 mm (13.8 in) high is optimized for rapid inspection of small articles, allowing the XIS to inspect them with state-of-the-art imaging.

PC-Based System

The XIS-5335 X-ray System is a PC-based system, which runs on Windows XP Professional. The XIS combines the latest software and hardware technologies to provide superior image clarity, resolution and processing power.

Networking

The XIS-5335 X-ray System is designed to network with other inspection systems using high-speed ethernet TCP/IP data communication. Images from any XIS model can be sent through the network to a central server where they can be viewed, stored, and printed.

Standard Features

- Automatic Edge-Enhancement Imaging
- Automatic Image Archiving - up to 50,000 images
- Automatic Z-number Measurement
- Baggage Counter
- Color and Black and White Imaging
- Density Alert
- Forward & Backward Conveyor Movement
- Geometric Image Distortion Correction
- High Penetration Function
- Horizontal and Vertical Imaging
- Image Review - for up to last 100 images
- Manual Archiving of Images in Bitmap Format
- Manual Archiving of Suspect Images
- Organic & Inorganic Imaging
- Picture Perfect - for improved resolution / penetration
- Print Image
- Programmable Penetration / Contrast Levels
- Pseudocolor and Reverse Monochrome
- Real Time Image Manipulation
- Self Diagnostics
- User-Defined Access to Image Archive
- User-Selectable Zoom-In 2X to 32X
- 17 Inch LCD Color Monitor

ASTROPHYSICS - X-RAY MACHINES

X-Ray Generator

Voltage	90 kV
Tube Current	0.7mA
Cooling	Sealed Oil Bath
Duty Cycle	100%
Beam Direction	Vertically Upward

X-Ray Detector

1024 Channels in an 'L' Shaped Array

Environmental Conditions

Operating Temperature	-10 to 50 C / 14 to 122 F deg
Storage Temperature	-20 to 60 C / -4 to 140 F deg
Humidity	up to 95% non-condensing

Health & Safety

Complies with published international standards including the U.S.F.D.A., Center for Devices and Radiation Health performance standards for cabinet X-Ray systems (Federal Standard 21-CFR 1020.40). Typical leakage radiation is less than 0.1mR/hr, compared with maximum leakage at 0.5mR/hr permitted by the Federal Standard. Film safety guaranteed for high speeed films up to ISO 1600.

Operational Standards

Complies with published international standards including the U.S. Federal Aviation Administration Standards "Use of X-Ray Systems" (Federal Standards 14 CFR 108.17 and 14 CFR 129.26).

ISO 9001: 2000

Astrophysics Inc is an ISO 9001:2000 certified organization.

Design Policy

Astrophysics Inc. pursues continuous product development and improvement. Astrophysics Inc. reserves the right to make changes in specifications without notice.

Technical Specifications

Sensitivity	40 AWG
Spatial Resolution	1 mm both Horizontal and Vertical
Penetration	10 mm Steel
Contrast Sensitivity	24 Visible Levels, 8192 Gray Level
Dose per inspection	0.25mR Typical
Power Requirements	110 ~ 120 VAC, 15 Amps Max. 220 ~ 240 VAC, 10 Amps Max.

Physical Specifications

Net Weight	Approx. 307 Kg (678 lbs)
Gross Weight	Approx. 393 Kg (1160 lbs)
Tunnel Opening	530 mm (20.9 in) x 350 mm (13.8 in)
Conveyor Speed	13.7 m/min.
Conveyor Height	730 mm (28.75 in)
Conveyor Capacity	165 Kg Distributed Load (364 lbs)
Dimensions	1340 mm x 760 mm x 1220 mm 53 in x 30 in x 48 in

Computer Specifications

At a minimum: Core 2 Duo 1.8 GHz, 1 GB RAM, 80GB HDD, 256MB VGA, UPS to support PC and electronics.

Video Display

Single 17 in. high resolution, low radiation, ergonomic, LCD color monitor. Display resolution: 1280 x 1024; 24 bit/pixel color representation.

Optional Accessories and Features

- Additional Monitor (Includes side table for placement)
- Advanced Continuous Diagnostics
- Advance Image Archiving (100,000 images)
- Entry/Exit Rollers (0.5m, 1.0m or 1.5m long)
- Exit Table (1.0m long)
- Network Supervisor Station
- Remote Operator Workstation
- Screener Assist Threat Detection
- Screener Training Program
- Search / Suspect Station
- Threat Image Projection (TIP) Software

ASTROPHYSICS - X-RAY MACHINES

XIS-5335 S

Astrophysics Inc. is a leading designer, developer and manufacturer of x-ray inspection equipment for baggage, cargo and person screening in security applications.

The XIS-5335S is the ideal solution for screening small parcels for airports, government offices, and other business applications. The tunnel size of 530 mm (20.9 in) wide by 350 mm (13.8 in) high is optimized for rapid inspection of small articles, allowing the XIS to inspect them with state-of-the-art imaging. The 5335S comes in three conveyor configurations: Standard Short Conveyor, Long Conveyor (LC) and Folding Conveyor (FC).

PC-Based System

The XIS-5335S is a PC-based system, which runs on Windows XP Professional. The XIS combines the latest software and hardware technologies to provide superior image clarity, resolution and processing power.

Networking

The XIS-5335S is designed to network with other inspection systems using high-speed ethernet TCP/IP data communication. Images from any XIS model can be sent through the network to a central server where they can be viewed, stored, and printed.

Standard Features

- Automatic Image Archiving - up to 50,000 images
- Baggage Counter
- Color and Black and White Imaging
- Density Alert
- Edge-Enhancement Imaging
- Forward & Backward Conveyor Movement
- Geometric Image Distortion Correction
- High Penetration Function
- Horizontal and Vertical Imaging
- Image Annotation
- Image Review - for up to last 100 images
- Manual Archiving of Images in Bitmap Format
- Manual Archiving of Suspect Images
- Organic & Inorganic Imaging
- Picture Perfect - for improved resolution / penetration
- Print Image
- Programmable Penetration / Contrast Levels
- Pseudocolor and Reverse Monochrome
- Real Time Image Manipulation
- User-Defined Access to Image Archive
- User-Selectable Zoom-In 2X to 32X
- Z-number Measurement
- 17 Inch LCD Color Monitor

ASTROPHYSICS - X-RAY MACHINES

X-Ray Generator

Voltage	160kV - operating at 148 kV
Tube Current	0.7mA
Cooling	Sealed Oil Bath
Duty Cycle	100%
Beam Direction	Vertically Upward

X-Ray Detector

1024 Channels in an 'L' Shaped Array

Environmental Conditions

Operating Temperature	-10 to 50 C / 14 to 122 F deg
Storage Temperature	-20 to 60 C / -4 to 140 F deg
Humidity	up to 95% non-condensing

Health & Safety

Complies with published international standards including the U.S.F.D.A., Center for Devices and Radiation Health performance standards for cabinet X-Ray systems (Federal Standard 21-CFR 1020.40). Typical leakage radiation is less than 0.1mR/hr, compared with maximum leakage at 0.5mR/hr permitted by the Federal Standard. Film safety guaranteed for high speeed films up to ISO 1600.

Operational Standards

Complies with published international standards including the U.S. Federal Aviation Administration Standards "Use of X-Ray Systems" (Federal Standards 14 CFR 108.17 and 14 CFR 129.26).

ISO 9001: 2000

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Design Policy

Astrophysics Inc. pursues continuous product development and improvement. Astrophysics Inc. reserves the right to make changes in specifications without notice.

Technical Specifications

Sensitivity	38 AWG
Spatial Resolution	1 mm both Horizontal and Vertical
Penetration	30 mm Steel
Contrast Sensitivity	24 Visible Levels, 4096 Gray Level
Dose per inspection	0.1mR Typical
Power Requirements	110 ~ 120 VAC, 15 Amps Max. 220 ~ 240 VAC, 10 Amps Max.

Physical Specifications

Net Weight	Approx. 412 Kg (908 lbs)
Gross Weight	Approx. 526 Kg (1160 lbs)
Tunnel Opening	530 mm (20.9 in) x 350 mm (13.8 in)
Conveyor Speed	13.7 m/min.
Conveyor Height	730 mm (28.75 in)
Conveyor Capacity	165 Kg Distributed Load (364 lbs)
Dimensions	1300 mm x 760 mm x 1220 mm 51 in x 30 in x 48 in

Computer Specifications

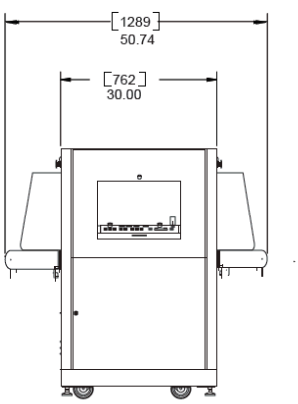
At a minimum: Core 2 Duo 1.8 GHz, 1 GB RAM, 80GB HDD, 256MB VGA, UPS to support PC and electronics.

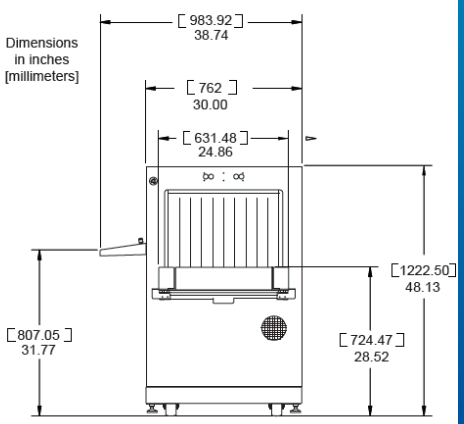
Video Display

Single 17 in. high resolution, low radiation, ergonomic, LCD color monitor. Display resolution: 1280 x 1024; 24 bit/pixel color representation.

Optional Accessories and Features

- Advanced Continuous Diagnostics
- Advance Image Archiving - Based on additional hard drive space
- Entry/Exit Rollers (0.5m, 1.0m or 1.5m long)
- Exit Table (1.0m long)
- Folding Conveyor (FC) shortens length to 1150 mm / 45 inches when folded
- Localized Language Capability
- Long Conveyor (LC) extends length to 2100 mm / 83 inches
- Network Supervisor Station
- Remote Operator Workstation
- Screener Assist Threat Detection
- Screener Training Program
- Search / Suspect Station
- Threat Image Projection (TIP) Software





ASTROPHYSICS - X-RAY MACHINES

XIS-6545

Astrophysics inc.

The XIS-6545 X-ray System is the ideal solution for screening small parcels for airports, government offices, and other business applications. The tunnel size of 650 mm (25.6 in) wide by 450 mm (17.7 in) high is optimized for rapid inspection of small articles, allowing the XIS to inspect them with state-of-the-art imaging.

PC-Based System

The XIS-6545 X-ray System is a PC-based system, which runs on Windows XP Professional. The XIS combines the latest software and hardware technologies to provide superior image clarity, resolution and processing power.

Networking

The XIS-6545 X-ray System is designed to network with other inspection systems using high-speed ethernet TCP/IP data communication. Images from any XIS model can be sent through the network to a central server where they can be viewed, stored, and printed.

Standard Features

- Automatic Edge-Enhancement Imaging
- Automatic Image Archiving - up to 50,000 images
- Automatic Z-number Measurement
- Baggage Counter
- Color and Black and White Imaging
- Density Alert
- Forward & Backward Conveyor Movement
- Geometric Image Distortion Correction
- High Penetration Function
- Horizontal and Vertical Imaging
- Image Review - for up to last 100 images
- Manual Archiving of Images in Bitmap Format
- Manual Archiving of Suspect Images
- Organic & Inorganic Imaging
- Picture Perfect - for improved resolution / penetration
- Print Image
- Programmable Penetration / Contrast Levels
- Pseudocolor and Reverse Monochrome
- Real Time Image Manipulation
- Self Diagnostics
- Two 17 Inch LCD Color Monitors
- User-Defined Access to Image Archive
- User-Selectable Zoom-In 2X to 32X

ASTROPHYSICS - X-RAY MACHINES

X-Ray Generator

Voltage	160 kV - operating at 148 kV
Tube Current	0.7mA
Cooling	Sealed Oil Bath
Duty Cycle	100%A
Beam Direction	Vertically Upward

X-Ray Detector

1280 Channels in an 'L' Shaped Array

Environmental Conditions

Operating Temperature	-10 to 50 C / 14 to 122 F deg
Storage Temperature	-20 to 60 C / -4 to 140 F deg
Humidity	up to 95% non-condensing

Health & Safety

Complies with published international standards including the U.S.F.D.A., Center for Devices and Radiation Health performance standards for cabinet X-Ray systems (Federal Standard 21-CFR 1020.40). Typical leakage radiation is less than 0.1mR/hr, compared with maximum leakage at 0.5mR/hr permitted by the Federal Standard. Film safety guaranteed for high speeed films up to ISO 1600.

Operational Standards

Complies with published international standards including the U.S. Federal Aviation Administration Standards "Use of X-Ray Systems" (Federal Standards 14 CFR 108.17 and 14 CFR 129.26).

ISO 9001: 2000

Astrophysics Inc is an ISO 9001:2000 certified organization.

Design Policy

Astrophysics Inc. pursues continuous product development and improvement. Astrophysics Inc. reserves the right to make changes in specifications without notice.

Technical Specifications

Sensitivity	38 AWG
Spatial Resolution	1 mm both Horizontal and Vertical
Penetration	30 mm Steel
Contrast Sensitivity	24 Visible Levels, 4096 Gray Level
Dose per inspection	0.1mR Typical
Power Requirements	110 ~ 120 VAC, 15 Amps Max. 220 ~ 240 VAC, 10 Amps Max.

Physical Specifications

Net Weight	Approx. 591 Kg (1304 lbs)
Gross Weight	Approx. 732 Kg (1614 lbs)
Tunnel Opening	650 mm (25.6 in) x 450 mm (17.7 in)
Conveyor Speed	13.7 m/min. (45 ft./min.)
Conveyor Height	730 mm (28.75 in)
Conveyor Capacity	165 Kg Distributed Load (364 lbs)
Dimensions	2170 mm x 890 mm x 1310 mm 85.5 in x 35 in x 51.5 in

Computer Specifications

At a minimum: Core 2 Duo 1.8 GHz, 1 GB RAM, 80GB HDD, 256MB VGA, UPS to support PC and electronics.

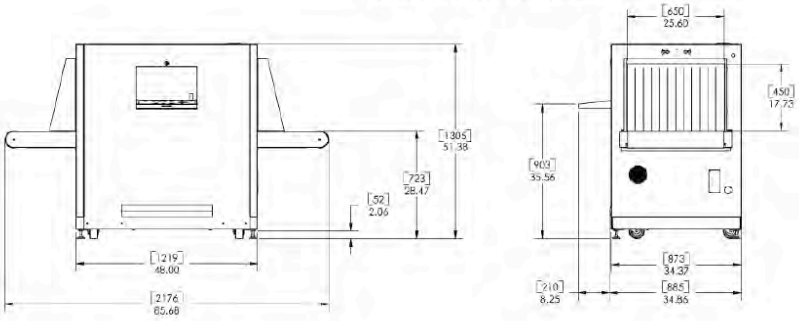
Video Display

Dual 17 in. high resolution, low radiation, ergonomic, LCD color monitor. Display resolution: 1280 x 1024; 24 bit/pixel color representation.

Optional Accessories and Features

- Advanced Continuous Diagnostics
- Advance Image Archiving (100,000 images)
- Entry/Exit Rollers (0.5m, 1.0m or 1.5m long)
- Exit Table (1.0m long)
- Long Conveyor (LC) extends length to 2540 mm (100 in)
- Network Supervisor Station
- Remote Operator Workstation
- Screener Assist Threat Detection
- Screener Training Program
- Search / Suspect Station
- Threat Image Projection (TIP) Software
- 180 kV Generator for High Penetration (Guaranteed 35mm steel)

Dimensions in inches [millimeters]



ASTROPHYSICS - X-RAY MACHINES

XIS-7858

Astrophysics inc.

The XIS-7858 X-ray System is the ideal solution for screening small parcels for airports, government offices, and other business applications. The tunnel size of 775 mm (30.5 in) wide by 575 mm (22.6 in) high is optimized for rapid inspection of small articles, allowing the XIS to inspect them with state-of-the-art imaging.

PC-Based System

The XIS-7858 X-ray System is a PC-based system, which runs on Windows 2000 SP4 or Windows XP Professional. The XIS combines the latest software and hardware technologies to provide superior image clarity, resolution and processing power.

Networking

The XIS-7858 X-ray System is designed to network with other inspection systems using high-speed ethernet TCP/IP data communication. Images from any XIS model can be sent through the network to a central server where they can be viewed, stored, and printed.

Imaging Characteristics

- *Color* and *Black and White* Imaging
- *Organic* & *Inorganic* Imaging
- *Pseudocolor* and *Reverse Monochrome*
- Automatic *Edge-Enhancement* Imaging
- Automatic *Image Archiving/Retrieval* (25,000 images)
- Image Review - Last 50 Images
- Automatic *Z-number* Measurement
- *Density Alert*
- *Geometric Image Distortion Correction*
- User-Selectable *Zoom-In* 2X to 32X
- Programmable Penetration Levels
- Variable Contrast Level Control
- *Operator Training Program (OTP)*
- *Picture Perfect*
- Dual 17 in. LCD Flat Panel Color Monitor

ASTROPHYSICS - X-RAY MACHINES

X-Ray Generator

Voltage	160kV
Tube Current	0.7mA
Cooling	Sealed Oil Bath
Duty Cycle	100%A
Beam Direction	Vertically Upward

X-Ray Detector

1664 Channels in an 'L' Shaped Array

Environmental Conditions

Operating Temperature	0° to 40° deg C
Storage Temperature	-20° to 60° deg C
Humidity	up to 95% non-condensing

Health & Safety

Complies with all published international standards including the U.S.F.D.A., Center for Devices and Radiation Health standards for cabinet X-Ray systems (Federal Standard 21-CFR 1020.40). Typical leakage radiation is less than 0.1mR/hr, compared with maximum leakage at 0.5mR/hr permitted by the Federal Standard. Film safety guaranteed for high speeed films up to ISO 1600.

Operational Standards

Complies with all published international standards including the U.S. Federal Aviation Administration Standards "Use of X-Ray Systems" (Federal Standards 14 CFR 108.17 and 14 CFR 129.26).

ISO 9001: 2000

Astrophysics Inc is an ISO 9001:2000 certified organization.

Design Policy

Astrophysics Inc. pursues continuous product development and improvement. Astrophysics Inc. reserves the right to make changes in specifications without notice.

Technical Specifications

Sensitivity	42 AWG
Spatial Resolution	1 mm both Horizontal and Vertical
Penetration	30 mm Steel
Contrast Sensitivity	24 Visible Levels, 4096 Gray Level
Dose per inspection	0.1mR Typical
Power Requirements	110 ~ 120 VAC, 15 Amps Max. 220 ~ 240 VAC, 10 Amps Max.

Physical Specifications

Net Weight	Approx. 1250 Kg
Gross Weight	Approx. 1375 Kg
Tunnel Opening	775 mm (30.5 in) x 575 mm (22.6 in)
Conveyor Speed	13.7 m/min.(42 fps)
Conveyor Height	737 mm (29.0 in)
Conveyor Capacity	145 Kg Distributed Load
Dimensions	2851 mm x 1446 mm x 1118 mm

Computer Specifications

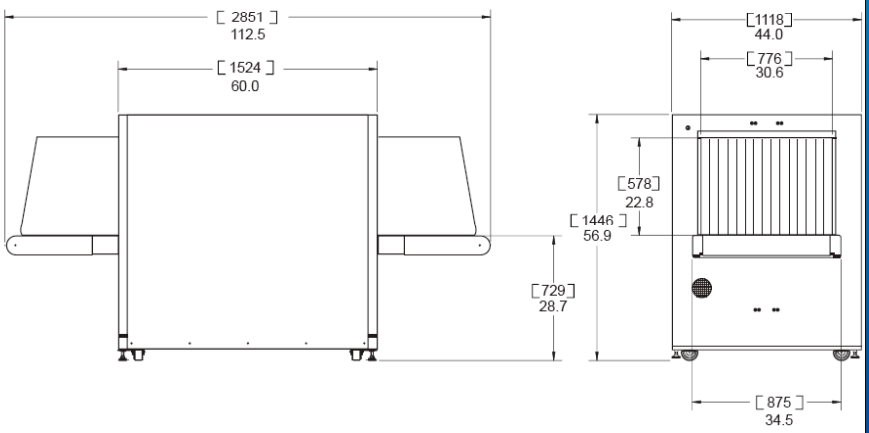
At a minimum: Intel Pentium 4™, 2.8GHz Dual Core, 512MB RAM, 80GB HDD, 256MB VGA Dual DVI, UPS to support PC and electronics.

Video Display

Dual 17 in. high resolution, low radiation, ergonomic, flicker free LCD flat panel color monitor.

Optional Accessories and Features

- Entry/Exit Rollers (1.0m or 1.5m long)
- Exit Table (1.0m long)
- Threat Image Projection (TIP) Software
- Screener Assist Threat Detection
- Screener Training Program
- Advance Image Archiving (100,000 images)
- Remote Operator Workstation
- Network Supervisor Station
- Inclined Conveyors
- 180 kv Generator (37mm Typical Penetration, 35mm Guaranteed)



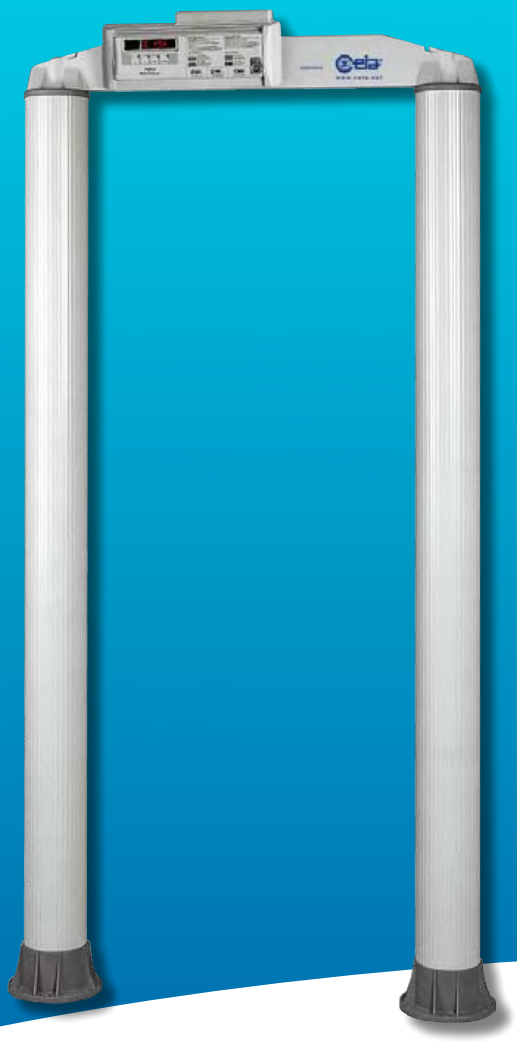
Seamless Integrated Security Solutions
by Africa Strategic Asset Protection

CEIA - WALK THROUGH METAL DETECTORS

An ISO 9001 Company CERTIFIED

Classic

WALK-THROUGH METAL DETECTOR



www.ceia.net

- *High Level of Detection Uniformity*
- *Leading Edge Technology*
- *Easy to Install and Use*
- *Suitable for Portable Applications*
- *No Maintenance Required*
- *Affordable Pricing*

CEIA - WALK THROUGH METAL DETECTORS

Classic WALK-THROUGH METAL DETECTOR

The Classic is a Walk-Through Metal Detector designed and engineered to meet the specific security needs of public facilities *such as schools, hotels, amusement parks and city halls. The Classic Metal Detector combines the required Security with a high level of operating efficiency. The leading edge technology features a* ***high flow rate of people through the gate with the minimum number of nuisance alarms****, as personal effects such as coins, keys and belt buckles can pass through the magnetic field without causing an alarm.*

The Classic Metal Detector is ***compact and lightweight****, making this portable unit adaptable to any surroundings. The patented cylinder design is aesthetically suitable for the most discrete applications. This security equipment does not require any special training for normal use, making this* ***the most "user friendly" walk-through metal detector in the industry****.*

CEIA Metal Detectors have been selected by the leading security agencies worldwide to protect high-ranking government officials. The Classic ***conforms to all International Security Standards*** *and is capable of detecting both magnetic and non-magnetic weapons.*

When security, operating efficiency and affordable pricing are required, the CEIA Classic Metal Detector is the obvious solution.

CEIA S.p.A. An ISO 9001 Company

THE **Classic/Navy** MODEL IS PARTICULARLY SUITABLE FOR ENVIRONMENTS WITH LIMITED HEADROOM, AND FEATURES AN ELECTRONICS UNIT IN A STAINLESS STEEL IP65 CONTAINER

TECHNICAL DATA

CE

MAIN FEATURES

- Digitally-adjustable sensitivity with a wide range of values
- All functions controlled by microprocessor
- Programming access protected by hardware key
- Automatic synchronization between two or more metal detectors, at a minimum distance of 2 inches (5 cm) from each other, without using cables
- Professional high integration and high reliability electronics
- Control unit incorporated into the detector
- No initial or periodic calibration
- Easy maintenance. Modular control unit for rapid replacement
- Colour: light grey RAL 7040.

INSTALLATION DATA

- Power Supply:
  115-230 Vac, +10/-20%,
  45 ÷ 65 Hz, 20 VA max
- Operating temperature:
  from -10°C to +65°C
- Relative humidity:
  from 0 to 95% (without condensation).

ALARMS

- **Visible signals**
  - High intensity display
  - Green and red metering signals proportional to the mass of the object detected
- **Audible signals**
  - High acoustic intensity alarm signal
  - Volume and tone of alarm signal are programmable.

CERTIFICATION AND CONFORMITY

- Complies with Regulations relating to pacemakers, defibrillators or other vital support systems, pregnant women and magnetic storage media (floppy disks, audio cassettes, video cassettes and similar)
- Conforms to the current International Security Standards for Walk-Through Metal Detectors
- Complies with EC Regulations and International Standards relating to Electrical Safety and Electromagnetic Compatibility (EMC).

ACCESSORIES / OPTIONS

- Steel stabilizer plates for portable applications.
- Standardized test samples
- External Main Battery Supply Unit MBSU-1, including emergency batteries and automatic charger, providing about 8 hours of independent operation.

	CLASSIC	CLASSIC/NAVY
UW	720/820* mm	720/820* mm
UH	1965 mm	1835 mm
TH	2152 mm	2000 mm

* AVAILABLE ON REQUEST

UNDER THE ALARM THRESHOLD

Small metal mass

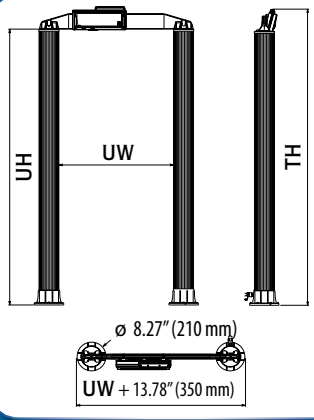
Medium metal mass

OVER THE ALARM THRESHOLD

Medium metal mass

Large metal mass

GREEN AND RED METERING SIGNALS PROPORTIONAL TO THE METAL MASS DETECTED



OVERALL DIMENSIONS

www.ceia.net

Zona Industriale 54/G, 52040 Viciomaggio - Arezzo (ITALY)
Tel.: +39 0575 4181 Fax: +39 0575 418298 E-mail: infosecurity@ceia-spa.com

CEIA reserves the right to make changes, at any moment and without notice, to the models (including programming), their accessories and optionals, to the prices and conditions of sale.

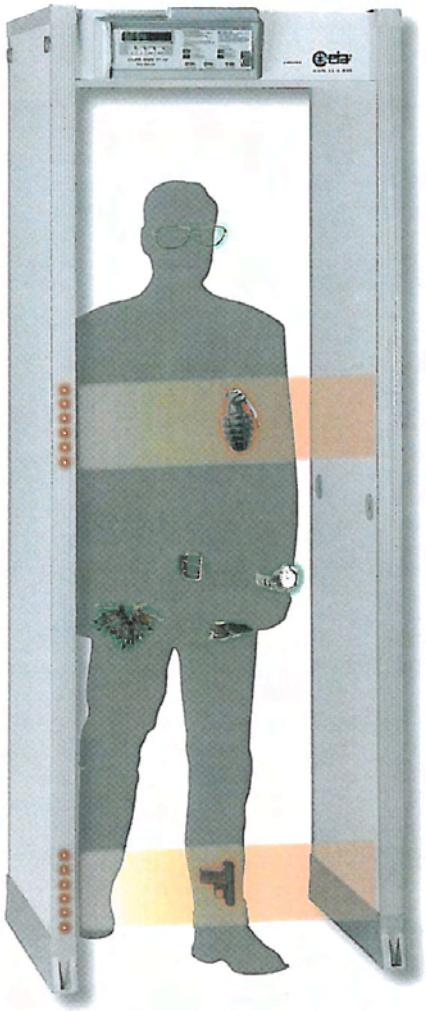
DP010 GB 60K20 - 32310

CEIA - WALK THROUGH METAL DETECTORS

CEIA An ISO 9001 Company CERTIFIED

HI-PE MULTI ZONE

HIGH PERFORMANCE METAL DETECTOR



- *Complete Security Detection*
- *High Discrimination*
- *Highly Visible Double Display provides single or multiple location of metal objects in transit*
- *Very High Speed of Detection*
- *Available in Outdoor Version (IP55)*
- *High Immunity to External Interferences*
- *Direct Selection of the International Security Standards*
- *High Reliability*
- *Local or Remote Programming with Networking Capabilities*

CEIA®

CEIA - WALK THROUGH METAL DETECTORS

www.ceia.net

CE

The HI-PE Multi Zone *is a high performance walk-through metal detector which exceeds all International Security Standards.*

A "height on person" display actually indicates, by means of illuminated LED's, the position of the weapon on the person. *Three operating modes are available:* ***Floating*** *(standard): the location zones are not fixed, as in the case of metal detectors with multiple receiver-transmitter coils, but are variable and continuous so as to achieve optimum resolution;* ***8-Zones*** *and* ***4-Zones****: the alarm threshold can be adjusted individually for each zone. The panels are washable and they are equipped with shock absorbent edges to protect them against damages.*

HI-PE Multi Zone *can be supplied, on request, with two emergency batteries that automatically come into operation in the event of a mains failure. A photocell transit counter is available as an option. This will allow for statistical data to be accumulated on the persons passing through the detector.*

The detector's control unit is incorporated into the structure. Access to programming is protected both by a mechanical lock and by two alphanumeric passwords.

The HI-PE Multi Zone is manufactured using the most advanced electronics technology, ***conforming to ISO 9001 Quality Control Standard procedures.***

TECHNICAL DATA

MAIN FEATURES

- Immediate selection of International Security Standards.
- Detection of magnetic, non-magnetic and mixed alloys metal weapons.
- High detection speed: up to 15 m/s (45 ft/s)
- Very high immunity to both electrical and mechanical interference.
- Programmable operation controlled by microprocessor.
- Programming: via built-in keypad and display or RS232/RS485 serial connection to Remote Control Unit (RCU), PC or computer network.
- Programming access protected by a mechanical lock and two alphanumeric passwords.
- Cable-free automatic synchronisation between two or more Metal Detectors at a minimum distance of 5 cm (2 inches) from each other.
- High-integration professional electronics and maximum reliability.
- Control unit incorporated into the detector.
- No need for initial or periodic calibration.
- Easy maintenance: modular control unit for a rapid replacement.
- Colour: light grey RAL 7040.

INSTALLATION DATA

- Power Supply:
  115 / 230 VAC, ±15%, 45-65 Hz, 30 VA MAX.
- External interface: RS-232C for connection to a Remote Control Unit (RCU), a terminal, a computer, an external modem or other CEIA metal detectors.
- Operative temperature:
  from -15°C (5°F) to +70°C (158°F)
- Relative humidity:
  from 0 to 95% (without condensation).

CERTIFICATION AND CONFORMITY

- Harmless to wearers of pacemakers, defibrillators or other vital support systems, pregnant women and magnetic storage media (floppy disks, audio cassettes, video cassettes and similar).
- Conforms to the current International Security Standards for Walk-Through Metal Detectors.
- Complies with EC Regulations and International Standards relating to Electrical Safety and Electromagnetic Compatibility (EMC).

ALARMS

VISIBLE SIGNALS

- Multi-zone display bar for "height on person" localisation.
- High intensity display.
- Green and red metering signals proportional to the mass of the object detected.

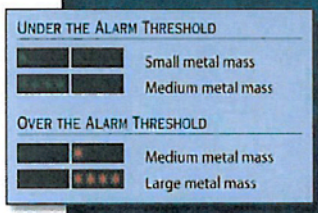
AUDIBLE SIGNALS

- High acoustic intensity alarm signal.
- Volume and tone of alarm signal can be programmed.

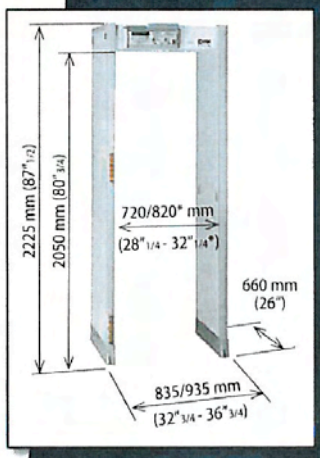
ACCESSORIES / OPTIONS

- Photocell transit counter and automatic alarm rate calculation.
- Outdoor Version (IP55).
- Remote Control Unit (CEIA RCU) with 20m (65.6 ft) of connection cable.
- Back-up batteries with 45 minute of independent operation.
- External Main Battery Supply Unit MBSU, including emergency batteries, that provide about 8 hours of independent operation and an automatic charger.
- Metal test samples.
- MD Scope: software for oscilloscope simulation and terminal operation on CEIA Metal Detectors.
- Ethernet Network Controller for CEIA Metal Detectors.

SINGLE & MULTIPLE LOCATION OF THE METAL MASS DETECTED



GREEN AND RED METERING SIGNALS PROPORTIONAL TO THE METAL MASS DETECTED



HI-PE MULTI ZONE OVERALL DIMENSIONS.
* AVAILABLE ON REQUEST.

ASAP
AFRICA STRATEGIC ASSET PROTECTION
Security Solution Provider
103 Kyalami drive, Killarney Gardens,Cape Town,7441.
Ph: +27 21 556 9318, Fax: +27 21 556 6687, Website: www.asap-group.co.za, E-mail: admin@afrisap.co.za

CEIA reserves the right to make changes, at any moment and without notice, to the models (including programming), their accessories and optionals, to the prices and conditions of sale.

DP018GB60K10 - 27303

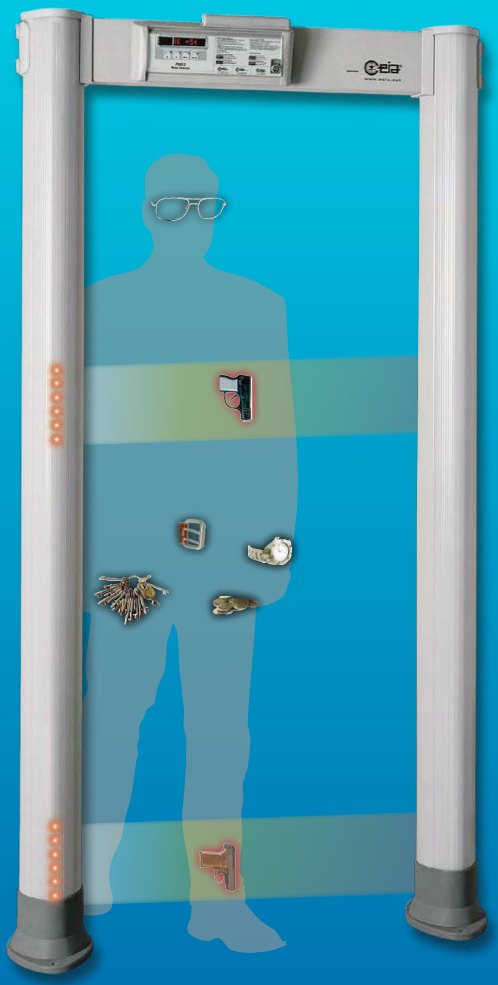
Seamless Integrated Security Solutions
by Africa Strategic Asset Protection

CEIA - WALK THROUGH METAL DETECTORS

An ISO 9001 Company

PMD2

VERY HIGH PERFORMANCE MULTI-ZONE METAL DETECTOR



AVAILABLE IN PANEL OR COLUMN VERSION

- *High Level of Detection Uniformity*
- *Very High Discrimination*
- *Highly Visible Double* Display provides Single or Multiple Location of Weapons in Transit*
- *Fast Programming through an Exclusive Chip Card System*
- *High Immunity to External Interferences*
- *Local or Remote Programming with Networking Capabilities*

** Single in column models*

www.ceia.net

CLASSIC - WALK THROUGH METAL DETECTORS

PMD2 Very High Performance Metal Detector

PMD2, acronym for* Programmable Metal Detector, *is the most advanced CEIA application with an international patent of its own. *It generates an electromagnetic scanning field for the detection of metallic weapons inside a monitored passage. Thanks to this technology, the PMD2 Metal Detector allows weapons to be accurately located on people in transit, considerably speeding up search operations.*

A "height on person" display actually indicates, by means of illuminated LED's, the position of the weapon on the person. *The location zones are not fixed, as in the case of metal detectors with multiple receiver-transmitter coils, but are variable and continuous so as to achieve optimum resolution.*

PMD2 can be supplied, on request, with two emergency batteries that automatically come into operation in the event of a mains failure.

PMD2 is available in panel (PMD2/PTZ) or column (PMD2/ENZ) version. Also an outdoor column version, PMD2/EWZ, is offered with an IP55 degree of protection.

A photocell transit counter is available as an option. This will allow for statistical data to be accumulated on the persons passing through the detector. The detector's control unit is incorporated into the structure. Access to programming is protected both by a mechanical lock and by two alphanumeric passwords. The PMD2 is manufactured using the most advanced electronics technology, ***conforming to ISO 9001 Quality Control Standard procedures.***

Technical Data

CE

Main features

- Immediate selection of International Security Standards.
- Detection of magnetic, non-magnetic and mixed alloys metal weapons.
- All functions programmable and controlled by a microprocessor.
- Programming: via built-in keypad and display or RS232 serial connection to Remote Control Unit (RCU), a PC or a computer network.
- Programming access protected by both a mechanical lock and by two alphanumeric passwords.
- High speed of detection: up to 15 meters per second (45 ft/s).
- Very high immunity to electromagnetic and mechanical interference.
- Automatic synchronization between two or more metal detectors, at a distance of up to 5 cm, from each other, without using cables.
- Professional high integration and high reliability electronics.
- Control unit incorporated into the detector.
- No initial or periodic calibration.
- Easy maintenance: modular control unit for a rapid replacement.
- Colour: light grey RAL 7040.

Installation Data

- Power Supply:
  115 / 230 VAC, ±15%, 50 ÷ 60 Hz, 30 VA max
- External interface: RS-232C for connection to a Remote Control Unit (RCU), a terminal, a computer, an external modem or other CEIA metal detectors
- Operative temperature:
  from -15°C (5°F) to +70°C (158°F)
- Relative humidity: from 0 to 95%
  (without condensation).

Certification and Conformity

- Complies with Regulations relating to pacemakers, defibrillators or other vital support systems, pregnant women and magnetic storage media (floppy disks, audio cassettes, video cassettes and similar).
- Conforms to the current International Security Standards for Walk-Through Metal Detectors.
- Complies with EC Regulations and International Standards relating to Electrical Safety and Electromagnetic Compatibility (EMC).

Alarms

- Visible signals
  - Multi-zone display bar for "height on person" localization.
  - High intensity display.
  - Green and red metering signals proportional to the mass of the object detected.
- Audible signals
  - High acoustic intensity alarm signal.
  - Volume and tone of alarm signal can be programmed.

Accessories / Options

- Photocell transit counter and automatic alarm rate calculation.
- Remote Control Unit (CEIA RCU) with 20 m (65.6 ft) of comnnection cable.
- Outdoor Version (IP55): PMD2/EWZ
- Test samples.
- External Main Battery Supply Unit MBSU-1, including emergency batteries and automatic charger, providing about 8 hours of independent operation.
- MD Scope: software for oscilloscope simulation and terminal operation on CEIA Metal Detectors.
- Ethernet Network Controller for CEIA Metal Detectors.

CEIA An ISO 9001 Company

www.ceia.net

Chip Card System: automatic calibration of Security Standards

Under the Alarm Threshold

Small metal mass

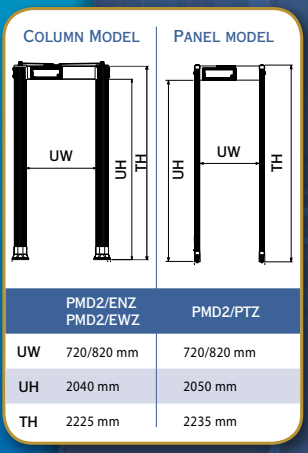
Medium metal mass

Over the Alarm Threshold

Medium metal mass

Large metal mass

Green and Red Metering Signals Proportional to the Metal Mass Detected



	PMD2/ENZ PMD2/EWZ	PMD2/PTZ
UW	720/820 mm	720/820 mm
UH	2040 mm	2050 mm
TH	2225 mm	2235 mm

Overall Dimensions

Zona Industriale 54/G, 52040 Viciomaggio - Arezzo (ITALY)
Tel.: 0575 4181 Fax: 0575 418298
E-mail: infosecurity@ceia-spa.com **Web: www.ceia.net**

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DP019 GB 60K13v2 - 27378

BRIJOT - MILLIMETER WAVE TECHNOLOGY

BRIJOT - MILLIMETER WAVE TECHNOLOGY

Is it practical to screen everyone that enters – or exits – your facility, without affecting the efficiency of your operations?

Do you know what your visitors, workforce, passengers, or spectators, are concealing past your metal detectors, bringing onto your transit system, into your stadiums, or are taking out the door with them? Is your security staff forced to guess who is hiding something without stopping and questioning each one? The Brijot BIS-WDS® GEN 2 System will allow you an easier way to know who to search and pinpoint where to look!

Brijot Imaging Systems, Inc. is proud to introduce the BIS-WDS® GEN 2 — the next generation cutting edge object detection and people screening technology. System features include full-motion, real-time passive millimeter wave imaging capabilities. Empowering you to detect concealed threats sooner, minimize loss prevention more effectively, and virtually pat down and screen people in areas that you have not been able to search them before.

- Monitored remotely
- In real time
- Without requiring cooperation
- Without a physical pat down

Brijot's standoff passive millimeter wave imaging system offers security and loss prevention officials a quick and discrete method for detecting suspicious hidden items ... whether they're explosives, weapons, contraband, stolen electronics, or other items. The GEN 2 also reveals hidden liquids and gels. Brijot's millimeter wave imaging solution is the most effective high-throughput people screening system available today to effectively detect these potential threats.

What is the BIS-WDS® GEN 2?

Brijot's GEN 2 technology is composed of a real-time Radiometric Scanner that images electromagnetic millimeter wave energy, an integrated full-motion video camera, on-board computer, and sophisticated, intelligent video detection engine. Using the GEN 2 value-added detection engine's capability your security screeners will automatically be alerted and can easily pinpoint concealed objects without intrusive, time-consuming, personnel-intensive and potentially dangerous physical searches, while allowing security screeners and law enforcement officers to perform "virtual" pat downs from a distance without direct contact. Brijot provides an effective means to manage threats before they become harmful incidents.

How does it work?

The system's *passive* Radiometric Scanner can detect concealed objects by distinguishing between the millimeter wave energy naturally emitted by the human body and the energy of the concealed objects even when they're hidden beneath clothing. It accomplishes this without radiating subjects, or posing health risks even to those persons with pacemakers, or pregnant women. Deployed as an stand-off application it will not cause claustrophobia and is a safe and discrete screening solution for all. Further, Brijot's millimeter wave sensors do not image anatomical details, thus protecting passenger privacy.

Feature Highlights:

- Detects concealed objects in as little as 0.5 second
- Subjects walk through the screening area when deployed in two-camera configurations
- Anatomical details are not revealed thereby eliminating personal privacy issues
- Completely passive system — no transmission of radiation or energy of any kind
- Seamless integration facilitating remote operation and administration of man-traps
- Monitoring & detection displayed to the operator in real-time
- Provides standoff detection of large explosives, liquids, gels, and other ferrous and non-ferrous items.

BRIJOT - MILLIMETER WAVE TECHNOLOGY

Applications

Used alone or as part of a comprehensive, multi-layered security solution, choose Brijot's proven reliability to achieve your security goals. Deploy the system as part of a high-security entrance portal, integrate it with existing devices such as X-Ray or metal detectors and find the items they are missing. Or use the GEN 2 to monitor your exits—you can even remotely image unattended locations. The GEN 2 is a must for any place where protection of life or loss prevention demands knowing which people are concealing hidden items — and pinpoint where they're hiding them.

Standoff Bomb and Weapon Detection: Protection from the threat. There is no need to put security staff or military personnel at arm's length from danger in high risk areas. Operated remotely, the GEN 2 can detect explosives or weapons and trigger a "lock-down" event, holding the suspect within a secure area. In today's high security environment, Brijot's imager adds an extra layer of protection, isolating the threat and alerting security personnel that a potential danger is approaching.

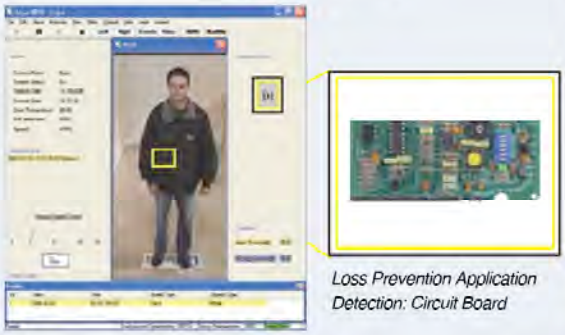
Airport/High Security Transportation Hubs: See what you're missing! Some locations—like airports and other critical transportation hubs, have already invested in security screening technologies like X-ray machines, metal detectors, and added security staff. But those technologies can't see explosive materials, liquids and gels, or thick packets of currency. GEN 2 can be integrated into your existing security strategy, and by imaging subjects in motion, it can be used to direct subjects into secondary screening lanes for further investigation, focusing security efforts and eliminating profiling or ineffective random screening.

Government Buildings/High-Security Hotels: Broaden counter-terrorism measures! Terrorism is one the greatest threats to the safety and security of public and private buildings such as federal office buildings, hotels and many national icons. The best defense to safeguard your facility, organization and operations is "detection" that enables an immediate "assessment" for the proper "reaction." With Brijot's GEN 2 millimeter wave technology you have full-motion, real time imaging capabilities which allow you to safeguard property and lives effectively. GEN 2 can be positioned at a distance from security personnel and operated remotely to protect them from the threat posed by suicide bombers.

Loss Prevention: Stem the tide of product shrinkage! Loss prevention personnel will find the GEN 2 invaluable in identifying hidden objects exiting a facility. The system can image metals, wood, electronic devices, bottles of liquor… even fresh or frozen foods! Managers and security personnel can pat down employees virtually without physical contact. Event logging functionality records the detection, providing ideal documentation in the event of an employee termination or theft prosecution.

Graphical User Interface

How easy is it to use? Brijot's Graphical User Interface (GUI) is a simple, easy to understand tool for all operators — you can identify hidden objects without confusion or delay. With minimal training, a GEN 2 user can clearly identify and locate hidden objects in real-time by observing event icons and detection boxes on a full-motion video images. Each event's video and passive millimeter wave images are digitally archived for later review, analysis, or evidentiary use. The JPEG images stored are millimeter wave images with no anatomical detail, ensuring personnel privacy is maintained.



Loss Prevention Application Detection: Circuit Board

Real-time Detection Engine

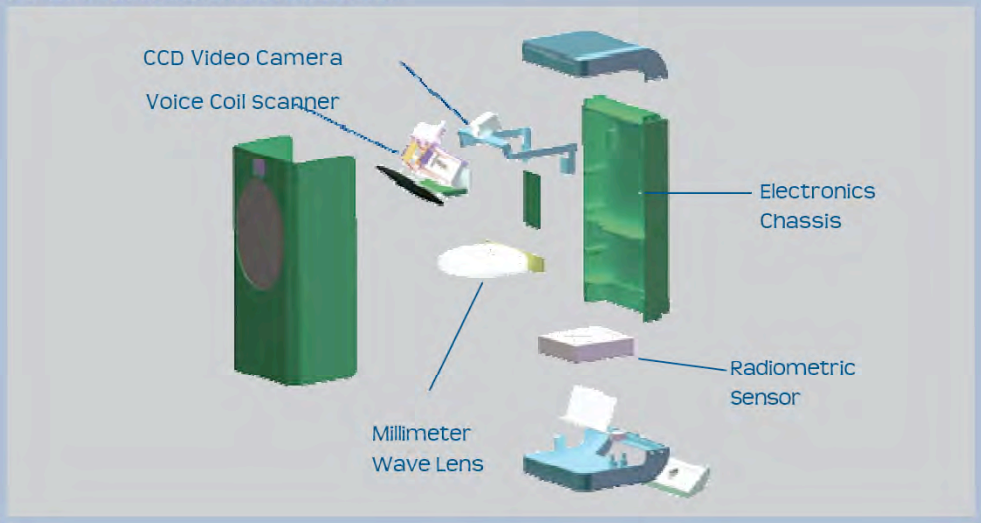
What's that they're hiding? Know sooner with our value-added detection engine, which identifies threats and concealed items on a subject in real-time—in as little as 0.5 second. The GEN 2 automatically alerts operators to the presence of very large objects—such as bombs—that could pose a serious threat. Indicator boxes pinpoint the precise area of hidden objects on the full-motion video and millimeter wave images. Displaying multiple detection events simultaneously, detection events can also serve as the "probable cause" that triggers secondary inspection events to examine an individual more closely.

Integration

What about my current systems? Good security often requires a multi-layered approach, incorporating a range of tools and carefully planned protocols, and the GEN 2 is designed to integrate seamlessly with other security systems. Each system has multiple inputs and outputs, and data can be accessed using the system's Application Programming Interface (API), allowing the Brijot system to work in tandem with your existing or planned security technologies. Brijot's system can be configured to trigger a "man-trap" application, locking out, or locking in individuals until you can identify what they're hiding.

BRIJOT - MILLIMETER WAVE TECHNOLOGY

BIS-WDS® GEN 2 Internal Components



Functional Considerations

Standard deployment: Indoor and outdoor environments. Some indoor settings and all outdoor deployment may require environment altering as specified by certified implementation personnel.
Indoor deployment considerations: Ambient air temperature not to regularly exceed 26° C (80°F). Anomalous heat sources behind walls and beneath floors. Sources of energy including sky access and reflective interior surfaces.
Other deployment considerations: Traditional CCTV deployment considerations apply. Minimize saturation – Avoid facing system directly into sunlight (CCTV camera consideration) or at the sky (millimeter wave system component consideration). Though the radiometer can operate in low- or no-light settings, the integral CCTV component requires lighting the FOV for effective video imaging.

Features

Imaging capabilities: Metals, plastics, ceramics, composites, glass, liquids, gels, explosives, weapons, currency, tobacco goods, and wood — including those commonly used to construct weapons and explosive devices.
Minimum object size: Imaged pixel size: Approximately 5 cm x 5 cm (2 in x 2 in). Detection engine optimization: Approximately 7.6 cm x 12 cm (3.0 in x 5.0 in)
Large object detection: Program system's detection engine to treat identification of large objects differently. Use system's alarm utility to configure and trigger specific actions upon detection.
Simultaneous processing: Detection engine processes multiple simultaneous detections. GUI displays up to 3 detection or "Large Object" icons at a time and features a contiguous running event log.
Fully-integrated on-board computer: Pentium®-based processor enables stand-alone operation without external PC connection. Microsoft Windows XP™ Operating System integrates with local area networks for remote viewing and control via GEN 2 Application Software and APIs.
Anti-tamper software: Applications actively prevent, detect and react to tampering and reverse engineering.
Imaging speed: MMW radiometer 4 to 12 frames per second (FPS); CCTV 30 FPS
Detection engine indications: Tri-colored box over location of detection on subject video image. Detection box features a black outside line, a white middle line and one of the following colors as the inside line, determined by the user-defined detection settings:
• Blue: D2 level detection (warning) • Yellow: D1 level detection (alarm) • Red: L large object detection
A corresponding tri-colored box also appears on the "Detection Status" area of the GUI with "D1," "D2 "or "L" detection status icons.

Specifications

Power supply: External Supply, 100 to 240 VAC, 47-63 Hz, 120 W; output 12 VDC, 10 A
Detector millimeter wave frequency: 80 to 100 GHz (90 GHz center frequency, 20 GHz bandwidth)
Operating temperature: -10°C to 50°C (14°F to 122°F)
Operating humidity: 0 to 100% RH condensing (outdoor use)
Dimensions (H x W x D): 83.8 cm x 34.5 cm x 34.9 cm (33.0 in x 13.5 in x 13.7 in) excluding mounting bracket
Weight: Net: approx. 39 kg (86 lbs) - excluding mounting bracket

Interfaces

Analog video output: NTSC or PAL, BNC connector
Monitor output: D-sub 15 (VGA) connector (1024 x 768 72 Hz default)
Control, setup and monitoring: 10/100 Ethernet, RJ45
Peripheral interface: Two USB 2.0; two IEEE 1394a (FireWire)
Keyboard/Mouse: Combined PS/2-type mini-DIN connector
Discrete I/O: 10 Position Phoenix™ connector; three user-defined outputs (dry contact Form C relay) and two user-defined inputs (opto-isolated)
Audio: One 3.5 mm jack for LINE OUT; one 3.5 mm jack for MIC IN

Innovative Detection/ Screening Solutions

Everyday, Brijot's cutting edge object detection/people screening system offers unsurpassed technology meeting security challenges in high threat environments. Brijot combines innovative engineering, quality materials, workmanship, outstanding customer service, and competitive pricing to bring you exceptional value. Brijot is a privately held USA Company, with corporate and training offices in Orlando, Florida. Brijot manufactures its system in an ISO 9000:2000 certified environment — another reason to select Brijot.

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ASAP
AFRICA STRATEGIC ASSET PROTECTION
Security Solution Provider

SDT - EXPLOSIVES & NARCOTICS DETECTOR

MN 1000B Series

Dual-Mode Explosives and Narcotics Trace Detector

SDT
Scent Detection Technologies

Technical Information

The MN1000B provides security professionals with the latest explosives and narcotics detection capabilities to address the rising global terror threats and growing traffic in contraband. This dual-mode system is ideal for facing evolving threats, safeguarding the traveling public and protecting critical infrastructure. With exceptional threat recognition and superior throughput, SDT trace detection systems offer outstanding detection, performance, and reliability across the spectrum of checkpoint security applications. Aviation security personnel and the military will benefit from the capability to detect explosives commonly used in IEDs. This includes TATP, Urea Nitrate and Ammonium Nitrate.

Customs, prisons, coast guard, border control agencies and federal agents now have the capability to detect narcotics and contraband such as Cocaine, Heroin, Methamphetamine and others. These operations are performed while ensuring an efficient and reliable sample collection process.

2006 FROST & SULLIVAN
Technology Innovation Award

Evolution of the MN1000B Series

Building on the success of SDT's range of trace detectors and based on the trusted HF-QCM technology, the MN1000B now incorporates dual-mode capabilities in a single unit. This enables the MN1000B to detect and identify a broader range of explosives and illicit substances while maintaining the highest levels of sensitivity and selectivity

The MN1000B is an integral and essential part of the security checkpoint and provides a complementary technological solution to X-ray systems, CT scanners and walk-through metal detectors. It closes security loopholes by detecting microscopic particles that remain on clothing, luggage, ID cards, vehicles and more.

SDT - EXPLOSIVES & NARCOTICS DETECTOR

The World Leader in Trace Detection Technology

Cutting Edge HF-QCM Technology

The HF-QCM technology implemented in the MN1000B is based on the proven success of the MN1000™ Series. Currently, airports, law enforcement agencies, military and private security companies, use over 1,200 units worldwide. The MN1000B detects parts-per-billion (ng) levels of explosives and narcotics particulates for most threat substances while maintaining false alarm levels below 1%. Furthermore, the MN1000B does not use any radioactive or ionizing source, and eliminates the typical costs associated with certifications, licenses, inspections and special disposal issues.

Efficient Operation

The MN1000B is lightweight and easy to operate, it comprises of a hand-held sampling unit and compact analyzer. Traces are collected via particle swipe and vacuum sampling, inserted for analysis, thermally drawn into a sensors' chamber then analyzed in real-time by pattern recognition algorithms. The MN1000B automatically self-calibrates and monitors its operating environment. No user intervention or calibration consumables are required; this results in a constant state of sampling readiness with minimal effort and cost.

Software

The MN1000B utilizes specially developed proprietary software that offers a color touch screen display, multi-language support and automatic collection of the sampling history (i.e. time, date and sample analysis). A complete history of the saved data and alarm files can be easily viewed, recalled, analyzed, downloaded and printed.

Lower Total Cost of Ownership

The MN1000B comes fully equipped in a rugged carry-on case ready for all types of field deployments. The system offers a maintenance free solution to the high cost of consumables, spare parts and overall cost of ownership that is often associated with trace detection systems.

Technical Specifications

Technology	High-Frequency Quartz Crystal Microbalance (HF-QCM) (No radioactive source)
Operating Modes	Explosives / Narcotics simultaneous, Explosives only, Narcotics only
Explosives Detected	TNT, C4, RDX, PETN, Semtex, Detasheet, TATP, Urea Nitrate and others
Narcotics Detected	Heroin, Cocaine, Amphetamine, Methamphetamine, MDA, THC, LSD, Ecstasy. Additional narcotics available upon expandable threat library
Sensitivity	Explosives / Narcotics: lowest nanogram range
False Alarm	< 1 %
Sample Collection	Particle swipe and/or vacuum sampling
Analysis Time	8-26 Seconds
Warm-up Time	< 10 minutes
Calibration	Automatic and continuous self-calibration
Software	Microsoft® Windows Mobile™
Data Transmission	Wi-Fi: integrated WLAN 802.11b, Bluetooth®, USB
Display	3.5" color TFT touch screen display
Alarm Method	Visible and audible alarm
Weight	Analyzer 3.1 lbs (1.4 Kg), Sampler 0.5 lbs (250 gr.)
Dimensions (H x W x D)	81 x 210 x 210mm / 3.2" x 8.3" x 8.3"

www.scent-tech.com

All specifications are subject to change without notice.

SDT
Scent Detection Technologies